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Identifying Tools for Systemic Teaching Analysis in Higher Education

Hyelan ROH*
Seowon University
Korea

Mina CHOI
Cheongju University
Korea

Youn-Kyung SEO
Seoul Women's University
Korea

The purpose of this study is to explore tools for systemic and integrated teaching analysis in recognition of problems derived from the existing teaching analysis which have been held fragmentarily and temporarily. In order to do so, a teaching analysis tools is identified by examining the current services of video-taping and analysis, which are the most representative teaching analysis methods among the Centers for Teaching and Learning (CTLs) in Korea, and by redefining teaching analysis through literature review. A teaching analysis is to be done to challenge teachers to change and grow by providing a motive to reflect on the act of teaching and carry out improvements, and it has to be held covering the general act of teaching and examined through diverse methods in systemic and multidimensional perspectives over a full period of teaching. In this study, an act of teaching is examined in four areas: planning, teaching skill, evaluation and reflection, and teaching analysis frameworks according to an act of teaching are suggested by periods of before, during, and after a term. Teaching analysis methods are also suggested by the frameworks.

Keywords : teaching analysis, act of teaching

* Dept. of Education, Seowon University
helen@seowon.ac.kr

Introduction

With the increasing demand on the improvement of college education, many colleges have recently been establishing the Centers for Teaching and Learning (CTL) and trying to support and strengthen teaching-learning abilities of professors and students. Many CTLs have provided professors with supplementary materials such as teaching guides and tips in order to strengthen their teaching abilities, and they have mainly used video-taping and analysis services for professors. As for a method to video-taping and analysis an instruction, many CTL's are using diverse ways. Among them, most colleges are using Cho (2002)'s analysis method, that he used in his counseling guide, by modifying it partially, and several colleges have developed and operating their own analysis standards.

The class analysis that evaluates a professor's current act of teaching is ultimately to improve the quality of a class in the aspect of formative evaluation (Barber, 1990). A professor's act of teaching itself is considered as very comprehensive and diverse, and it is a complex result from various, internal and external factors, by which attributes of professors and learning individuals, curriculum and contents, and colleges, etc. are interacted. So the analysis of teaching also needs to be developed multi-dimensionally in various aspects such as its purpose, analysis period, skills, material collection methods, analysis subjects, etc. In the cases of instruction video-taping and analysis service that are most commonly used today, they assess a professor's act of teaching overall with an analysis result from just one time of lecture. So they only give a limited analysis over the professor's teaching and provide very fragmentary and partial analysis instead of comprehensive and systemic diagnosis.

An act of teaching does not simply mean teaching skills to convey information. An effective act of teaching means a series of continued acts that analysis and design the knowledge of professional domain, to produce useful teaching materials, to facilitate the learning process effectively, and to evaluate its result rationally

(Borich, 2000; Bae, 1992; Vosniadou, 2001). Therefore, the effective teaching needs to be analyzed comprehensively, and systemic analysis methods that enable an analysis on the overall act of teaching should be applied to it. In order to do so, there needs to be a systemic analysis tools which can improve teaching abilities by providing appropriate diagnosis and feedback according to the teaching activities and time.

This study is derived from the awareness of these problems and its purposes are as follows.

1) To explore the current situation of teaching analysis that is being operated in higher education,

2) To define the concept of systemic teaching analysis as a comprehensive analysis according to act of teaching,

3) To identify tools of systemic teaching analysis.

The results of this study will make the foundation for a teaching analysis that used to be done fragmentarily and partially in the past, on which the act of teaching can be approached and analyzed overall through a comprehensive concept and systemic framework. Also, this study will provide CTL experts and professors themselves with systemic understanding and its practice of analysis tools development that are suitable for the detailed improvement of teaching abilities.

Theoritical Background

Concept of Teaching Analysis

To examine teaching analysis, what to be considered first are the components of teaching. Dawson (2004) maintains that teaching is like an art, so its analysis has to be made by a triangle analysis method, and that formative analysis over an act of teaching has to be done over several points of an instruction period. It means that a

teaching should be analyzed in perspectives of variety and continuity. The criteria of evaluating the quality of teaching may differ according to the various areas of academy, goal and level of courses, style of a professor, teaching methods, etc. However, the criterion that should be considered most is whether or not the teaching has improved the student's learning. In other words, the criteria of evaluating the quality of teaching should include forming positive learning environment, motivating a student for participation in the class, providing appropriate challenges, responding to a student's demand for learning, evaluating a student's learning fairly, etc. (SCOTL, 2002). Teaching is a compound and personal act of a professor, in which his/her teaching philosophy, teaching style, passion, teaching methods and strategies are melted. Therefore, the teaching analysis that diagnoses and evaluates the quality of a teaching has to be examined comprehensively, systemically, and multi-dimensionally instead of fragmentarily or temporarily.

Criteria of Effective Act of Teaching

In order to analysis teaching to improve abilities of a professor at college, the characteristics of an effective teaching need to be considered above all. The effect of a teaching means the extent how much impact a teaching has made on the learner's achievement. This effect can be analyzed by the professor's abilities or his/her instruction performance, and a student's learning achievement.

The core actions of a professor that affect an effective teaching can be summarized as follows (Anderson, 1982; Borich, 2000). The first action is 'clarity of a instruction'; a professor should explain instructional guide with clear points, making them easy to understand, using clear and logical concepts, in clear pronunciation, in an appropriate tone of voice, and without unnecessary speech habits. The second action is 'diversity of teaching methods'; a professor should use instructional media and materials as well as effective and various skills for asking questions. The third action is the 'extent of concentration of a professor for teaching'; a professor should concentrate on teaching a class. The professor has to

take time to prepare for the good quality of instruction, Q & A, ways to provoke students' proactive inquiries and thoughts during the instruction. Also the professor has to take enough time to prepare for the effective teaching-learning activity and to evaluate students' achievements efficiently. The fourth action is 'bringing about students' proactive participation during the instruction'. The fifth action is the 'success of a student's learning'; a professor must examine how well a student understands the contents and accomplishes its practice successfully. Vosniadou (2001) contended that a professor must have self-control, engage in self-regulation, be reflective and restructure prior knowledge.

In summary, an effective teaching is resulted from diverse teaching actions that are relevant to a student's achievement as a result of an instruction. It means a teaching in which a passionate professor equipped with professional knowledge leads students to take part in the instruction activities and motivates them to study by using various teaching methods in order to improve students' achievement. Most of the factors of an effective teaching are observed or analyzed through instruction performances. Thus, detailed strategies to strengthen a professor' teaching abilities can be drawn by diagnosing an instruction effectively through teaching analysis.

Teaching Analysis Methods

Video portfolio(video-taping analysis)

Video portfolio is a combined term of video and portfolio test, and it is a method to analysis a professor's class by videotaping and composing it in a portfolio (Baek, 1999). As a self- analysis process, video portfolio can be also used for discussion with other professors in review of the class recorded on video (Claydon & McDowell, 1993). The benefits of video portfolio are as follows. 1) It enables a repetitive view of teaching so that the improvements of the teaching may be picked easily. 2) Since sound and scene of the instruction are recorded and played together, the interaction between a teacher and a student and among

students during the class is easily caught. 3) Since many people can watch the video together and give feedbacks, various opinions can be collected. 4) A professor can learn other professors' teaching actions and strategies by watching their video portfolios and also develop self-initiated study, catching his/her own strengths and weakness easily. 5) Due to the cumulative record of one's teaching, it enables the continuing and direct checking over transforming and developing process.

Instructional observation

Instructional observation is to analysis teaching by participating in and observing a class of other professors. It enables a professor to experience the actual teaching of another professor, to confirm his/her strengths, to solve problems exchanging practical ideas, and to apply a practical teaching on the developed teaching and learning theories.

The instructional observation at college can consists of four stages; initial discussion, observation, following discussion, and writing a report (including reflection of a reporter).

Micro teaching

Similar to video portfolio and instructional observation, there is 'micro teaching' analysis method. It is not complicated and takes a short time to assess a teaching which is held in a small-sized class. Also, this analysis is applied to instruction held in condensed environment in the sense of class hours, class contents, professor' functions, the number of learners, classroom size, etc., and the stages of preparation, teaching, evaluation, re-teaching, and feedback are planned systemically.

Self-reflection

Self-reflection will be helpful for a professor to examine an education and improve it to higher level. Reflection is a core part of "leaning through experience" (Kolb, 1984), it is very effective in the development of a professor's teaching. Airasian & Gullickson (1994) emphasize the improvement of professional teaching

abilities through a professor's reflective self- analysis. A professor has to acquire an ability to reflect not only 'about' the teaching, 'for' the teaching, but also 'during' teaching. A professional's ability to reflect during the teaching operation and control his/her actions accordingly differentiates him/her from that of a beginner.

Current Teaching Analysis In Higer Education

A survey was held to examine the current situation of video-taping analysis service that is enforced by CTL in higher education today. The survey was done by e-mail by collecting responses from people who are in charge of teaching support department or center directors of 104 membership schools that are registered at the Association of Korean Center for Teaching-Learning. The e-mail addresses were taken from the membership school directory. Out of 104 schools, the persons in charge of 28 schools were changed or absent, or the survey was not sent through. Out of 76 who received the survey, 27 schools have not responded. So the response rate was about 35 %. Among the 27 CTL, there were 22 schools that were using video-taping analysis service, which is 73 % of all. The reasons why the rest of 5 schools did not enforce teaching analysis were lack of tools and experts who can operate those services (2 schools), low priority (2 schools), and lack of budget (1 school).

Below is to show the duration of the CTL's operation, the existence of teaching support department, the number of professional researchers, and the percentage of teaching method related services, etc. (Table 1).

The types of teaching analysis of each CTL are as below (Table 2).

The major purposes of teaching analysis service each CTL representative thought were to provide opportunities for self-reflection upon a professor's teaching, and to strengthen teaching skills. Below is the summary of these responses (Table 3).

Table 1. Overview of CTL Responded

(Unit: percentage (%))

Period of Operation	Under 2 years		3~4 years		5~6 years	Total
	6(27.2)		9(40.9)		7(31.8)	22(100.0)
Existence of Teaching Support Department	Yes			No		22(100.0)
	15(68.2)			7(31.8)		
Number of professional Researchers	None	1	2	3	Over 5	22(100.0)
	2(9.1)	8(36.4)	6(27.2)	4(18.2)	2(9.1)	
Teaching Method Related Services	10-20%	21-40%	41-60%	61-80%		22(100.0)
	5(22.7)	9(40.9)	4(18.2)	4(18.2)		

Table 2. Types of teaching Analysis (Redundant responses counted)

(Unit: frequency (%))

Video-taping analysis only provided	3(7.3)
Video-taping analysis with self-analysis check-list provided	19(46.3)
Video-taping analysis and expert's analysis	9(22.0)
Video-taping analysis and expert's analysis + survey on learner's analysis	9(22.0)
Video-taping analysis and expert's analysis + survey on learner's analysis + instructional design analysis	1(2.4)
Total	41(100.0)

Table 3. Major Purposes of teaching Analysis Service(Redundant responses counted)

(Unit: frequency (%))

Improvement of class quality through mid-term examination	8(25.0)
Strengthening a professor's teaching skills	11(34.4)
Record and preservation of class	1(3.1)
Provision of self-reflection opportunity for a professor	12(37.5)
Total	32(100.0)

As for analysis method after video-taping a instruction, there were 7 CTLs that analyze watching videotaped video only (33.3%), 11 CTLs that analyze video-taped instruction and direct observation of a class together (52.4%), and 3 CTLs that added video-taped instruction related survey to these analysis (14.3%). There were diverse cases who are involved in the teaching analysis. There were 15 CTLs where experts with master or doctor's degree, professional researchers working at the CTLs, enforce the analysis, one center where an outside professional researcher analysis, and one center where an education- related professor inside the school.

As for professional tools for teaching analysis, about 15 CTLs (68.2%) turned out using Cho(2002)'s analysis tool and there were 5 CTLs (22.7%), in which their own analysis methods were used. 16 CTLs (84.2%) responded that the analysis tools are appropriate, but some CTLs that their analysis tools are inappropriate because they did not quite fit for their instruction.

Regarding the follow-ups for the results from the teaching analysis, there were 10 CTLs (47.6%) saying that they enforce follow-ups according to the results of the lecture analysis, and 11 CTLs (52.4%) saying that they have no follow-up. The types of follow-up for improving a lecture are shown in the table below (Table 4).

Many CTLs commented that the quality of teaching analysis has to be upgraded with diverse and relevant materials to improve the current teaching analysis with video-taping. Some suggested that the analysis be diverse in accordance with the

Table 4. Types of Follow-up for Improving teaching (Redundant responses counted)

(Unit: frequency (%))

Provision of relevant materials for the teaching improvement	5(26.3)
Encouragement for participation in workshop for the teaching improvement	5(26.3)
Encouragement for participation in informal meeting for the teaching improvement	4(21.1)
Encouragement for improvements of teaching skills through continued video-taping analysis	5(26.3)
Total	19(100.0)

various instruction types. Also, many suggested that professors be encouraged to voluntarily participate in the teaching analysis by receiving incentives

Concept And Framework of Teaching Analysis

Defining of Teaching Analysis

Teaching is a compound and personal act of analysis, design, development, implement, evaluation by comprehensive criteria and complicated skills. Therefore, for teaching analysis as well, comprehensive criteria and multi-dimensional standards have to be collected and used for analysis and evaluation and the analysis has to proceed not just over one time of instruction, but at several points over a period of teaching.

In other words, the teaching analysis is aimed at stimulating professors to be changed and developed to be experts by reflection and practice over the general teaching activities. It is a series of process, in which an act of teaching has to be analyzed and diagnosed through diverse tools in systemic and multi-dimensional perspectives over the full period of teaching.

Teaching Areas for Identification Teaching Analysis Tools

Followed are the results from an analysis over the teaching areas that are shown in preceding study for identification of systemic teaching analysis tools. 11 studies are compared and analyzed here. Scholars classified an act of teaching similarly in areas of teaching skills and planning, but quite differently in the areas of evaluation and reflection, knowledge of subject and administration, and attitude. As we have already pointed out earlier, this study contend that the area of reflection needs to be emphasized than other areas for the growth of a professor. It is in accordance with the result of the survey with CTL that showed the top purpose of video-taping

analysis service is 'provision of a professor's reflection opportunity.' We classified 'the areas of class analysis that contribute to the improvement of a professor's specialty' under the area of 'reflection' and 'knowledge of subjects,' and 'attitude toward students and education' also under 'reflection.' On the other hand, since 'class management' is rather closely related to the instruction activity, it is classified to 'teaching skill'. Below is an analysis table that shows the rearrangement of diverse areas of an act of teaching (Table 5).

Table 5. Analysis on Teaching Activities for Rearrangement of Teaching Areas

	Planning	Teaching skill	Evaluation	Reflection	Knowledge	Administration and attitude
Oliva & Henson (1981)	–	Communication Skill/ technical skill	–	–	Basic knowledge	Classroom, Administrative skill/ Interpersonal skill
McGreal (1983)	Object define/ Organizing unit /Selecting content/Selecting materials	Leading student's concentration/ Suggesting clear contents/Control of pace and difficulty/Guiding student's participation/Class wrap-up	Evaluation in various methods and procedures/ Using the evaluation to improve learning and teaching	–	–	Keep rapport with students
Won (1998)	Understanding the learners' characteristics/ Setting the class objects/ Structuring instructional activities	Present contents/ Use of questions/ Use of feedbacks/ Providing learning opportunity /Forming learning environment/ Motivating student for learning	Implementation evaluation/ Interpretation and application of evaluation's result and effect	–	Knowledge of subjects	Forming sympathetic relationship with the learners/ Founding positive self-identity of the learners
Jill, etc (1997)	Forming sympathetic learning environment	Guiding the learner's participation/ Give appropriate responses to the learners/	–	Consistent self-development / Role models for effective	–	–

		facilitating learner to draw the outcome of learning by themselves.		teaching/ Showing leadership for development of specialty of other fellow professors/ Promoting improvement of the quality of teaching and learning at college or major fields/ Performing as a leader at a department		
Shulman (1987)	Transfer subjects into instructional system	–	instructional evaluation	Discovery through reflective thoughts	Understanding subjects	–
Scriven (1988)	Knowledge of instructional design	Effective communication / Class operation	Ability of evaluation/ Record of students' achievement	Recognition of professional performance of one's duty	Knowledge of subjects	–
Reynolds (1992)	Review materials of subjects and teaching methods /Preparations for space	Structure and coordination of students, class hours, and materials	Evaluation on learning	Critical reflection for instructional improvement / Specialty development/ Interaction with fellow teacher	–	–
Anderson (1982)	Understanding students	Giving appropriate assignments/ Guiding the contents of learning/Motivating learner/ Leading students to focus on learning activities/ Maintaining the continuity of learning/	Connecting teaching activities and evaluation	–	–	–

		Correcting mistakes and misunderstanding				
Bae (1987)	Planning and structuring the content	Leading and operation of instruction /Motivating students / Giving learning opportunity	–	–	–	Managing learner behaviors
Park (1987)	Planning and structuring instructional activities	Motives in using study materials/ Use of teaching aids / Operating teaching methods/ Forming learning environment/ Control of the learning process of a learner	–	–	Expert knowledge on subject	Building relationships with students
Foster (1982)	Planning for accomplishing instructional objectives/ Planning instructional schedule in consideration of individual	Effective structure of instruction/ Objectives and relevant skills/ Using methods and media/ Showing expert knowledge and confidence/ Communication with learners/ Strengthening and encouraging learning activities of students	Application of appropriate evaluation methods and procedures	Keeping specialized standards for a teacher/ Activities to develop specialty development	–	Showing desirable human attitudes as a teacher/ Application of preventive and correctional learning behavior management and its procedure
Number of Scholars	10	10	7	5	5	6
Rearrangement of Areas of Teaching Activities	<u>Planning</u> -Define of objectives -Design of content -Analysis of learners -Analysis of environment -Planning teaching and learning activities	<u>Teaching skill</u> -Application of media and materials -Forming instructional environment -Communication with learners -Clear presentation -Management of students and class	<u>Evaluation</u> -Evaluation of learners -Interpretation and application of the evaluation	<u>Reflection</u> -Instructional evaluation -Specialty on the subjects -Responsibility as a teacher (planning, teaching skills, evaluation) -Passionate attitudes toward students -Growth as a teacher		

Class Phases and Detailed Teaching Acts according to Teaching Areas

In accordance with the areas of rearranged teaching activities of planning, teaching skill, evaluation, and reflection as the results of analysis as above, we suggest the detailed teaching activities here to specify the teaching analysis that can systemically apply teaching improvements fitting for the flow of class phases (Table 6).

Table 6. Class Phases and Detailed Teaching Activities according to Teaching Areas

	Before a Term	During a Term	After a Term
Planning	-Analysis(learner, content, environment) -Planning(object, content)	-Planning detailed instruction per week -Planning teaching-learning activities	-Adjustment of analysis and planning
Teaching skill	-Application of media -Development of materials -Application of teaching methods -Operating instructional system	-Communication -Presentation -Class management -Student management	-Diagnosis of teaching skills -Adjustment of teaching skills
Evaluation	-Evaluation planning (content, method, standard, time)/ Planning for feedback	-Evaluation of learner's satisfaction and injection of instruction. -Examining validity and fairness of evaluation -Examining faithfulness of feedback	-Interpretation and application of the evaluation of learner's achievement
Reflection	-Setting the goal of growth by term as a teacher -Diagnosing teaching philosophy and style	-Cooperation with fellow professor for improvement of specialty -Injection of learner's reflection of instruction -Filing instructional materials and teaching and learning reflection journals	-Analysis and interpretation of instructional evaluation -Drawing the draft of instructional improvement plan -Planning teaching career development

Table 7. Teaching Analysis Framework by Teaching Activities

	Before a Term	During a Term	After a Term
Planning	-Analysis of instructional Design -Analysis of learners -Analysis of instructional environment	-Analysis instructional progress -Readiness of teaching-learning activity implementation	-Supplement and improvement of instructional design (content, method)
Teaching skill	-Analysis of media application skills - Readiness of teaching method application - Readiness of instructional material -Readiness of development and using of learning system	-Video-taping analysis / micro teaching -Analysis of instructional material -Analysis of teaching model	-Action plan for poor teaching skills development
Evaluation	-Planning evaluation and feedback (evaluation content, standard, method, time/ submission method of assignment and report)	-Survey on the learner's satisfaction -Examining validity and fairness of evaluation -Examining faithfulness of feedback (time, content, depth, individual comment)	-Drawing analysis and improvements of evaluation results -Analysis of the results of instructional evaluation
Reflection	-Analysis of teaching perspectives -Analysis of teaching style	-Diagnosis of teaching competency -Development of teaching portfolio -Observation on a instruction of a fellow-professor and its analysis -Review of a learner's reflection journals and self-reflection as a professor	-Planning for teaching career development

Systemic Teaching Analysis Tools by Teaching Activities

Based on the results our research as above, we would like to suggest a systemic teaching analysis tools that can be developed and operated according to the detailed teaching activities (Table 7). The suggested teaching analysis tools can be developed into the ones for self-analysis, for professionals, for learners and for fellow professors. A customized analysis will be possible for a self-planning if a guideline is developed so that a professor can selectively use the analysis according to his/her experiences and the purposes of class improvement. Some of the following tools are already developed at CTL of colleges in Koreas today, and there are newly searched tools in this study included. We are planning to develop further detailed constructing factors of each tool and the process of systemic diagnosis and feedback through the following studies in the future.

Conclusion

As they say that the quality of education cannot grow beyond that of a teacher, the qualities of a teacher/professor are important to the effective education. Thus, we should improve and develop the qualities of a professor for upgrading the quality of education. The teaching analysis has to be held to improve and develop continually a professor's general act of teaching through reflection on his/her teaching activities and its practice. In order to do so, a professor has to be able to analysis his/her teaching with various tools of comprehensively. Therefore, we suggested the development of systemic teaching analysis tools in this study. In the future, a comprehensive and systemic teaching analysis tools will need to be developed and practiced by developing, applying, and verifying.

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Hyelan ROH

Fulltime Lecturer, Dept. of Education, Seowon University. Interests: Instructional Design, Action Learning, e-Learning, Faculty Development

E-mail: helen@seowon.ac.kr

Mina CHOI

Fulltime Lecturer, Dept. of Graduate School of Education, Cheongju University. Interests: Educational Technology, Development and Design of e-Learning, Evaluation of e-Learning, Communities of Practice, Corporate Education

E-mail: mina@cju.ac.kr

Youn-Kyung SEO

Fulltime Lecturer, Seoul Women's University. Interests: Faculty Development, Teaching Method, e-Learning, Digital Literacy

E-mail: yunks@swu.ac.kr