

## Volume Four

### Exploring teacher/tutor cognition with activity theory: a case study of feedback given on the written assignments of undergraduate students in a New Zealand university

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#### Abstract

One weak point of traditional research of teacher cognition is that it mainly studies teachers at individual levels without considering the influence of context. This paper argues that Activity Theory can compensate this weak point because it provides the potential to study teacher cognition collectively in its real context. The paper starts with a brief review of the literature of teacher cognition which is limited at individual level. It points out that both teachers' beliefs and practices are socially and historically co-constructed within relevant discourse communities and communities of practices. This opinion is supported by Vygotsky's (1978) social-cultural theory and the notion of community of practice. It then argues that feedback as one of the most common teaching activities can be used as a good example of using activity theory to explore teacher cognition. Finally, it introduces a research design of a case study of teacher cognition which is based Engestrom's (1987) expanded model of activity theory, and will conclude with a brief statement of the significance of the research.

#### Introduction

Educational research was traditionally based on teaching and learning behavior. Only recently since 1975, teacher cognition has become the focus of study (Borg, 2006). However, the shortcoming of existing research on teaching cognition lies in their tendency to isolate teachers from the wider context of teaching which not only involves the relationship between teachers and their students but also includes their relationship within the community of teaching practice and other relevant elements within the context.

Therefore, the present paper argues for the following three claims:

Claim 1: Teacher cognition is composed of belief system and practice system, both of which are historically co-constructed within relevant discourse communities and communities of practices. Therefore, teacher cognition should be studied at both individual level and social level.

Claim 2: A good example of studying teaching cognition is the study of the activity of giving feedback on students' assignments which is one of the most common teaching activities yet least explored in the area of teacher cognition.

Claim 3: Activity Theory provides a framework for examining the above claims.

Teachers in the present research are those who teach English for academic purposes, especially academic writing (EAP teachers). Tutors in the present research are those who have specific knowledge in a specific area and whose work involves review and/or marking students' written assignments (subject tutors). Both EAP teachers and subject tutors are engaged in the activity of giving feedback on undergraduate students' written assignments in a specific university context. Therefore, they belong to the same activity system.

## **Teacher cognition: belief system and teaching practices at individual level**

Based on behaviorism, traditional research on teachers focused on how teaching behaviors influenced learning outcomes. With the development of cognitive psychology, researchers' attention shifted from teachers' external behavior of doing to their inner behavior of thinking. Studies following this tradition are carried out on teachers' decision-making, knowledge, and belief, which can be viewed as major components of teacher cognition, and how teacher cognition influences teaching behavior (Borg, 2003; 2006).

According to Richards (2000), teachers have their personal philosophies or maxims of teaching. These maxims are composed of teachers' belief systems which involve "the information, attitudes, values, expectations, theories, and assumptions about teaching and learning over time" (p. 66). It seems that this construct of a belief system involves knowledge and assumptions.

Woods (1996) developed a cognitive model for the study of teachers' BAK (belief, assumption, knowledge). The model is composed of three key elements: (i) the classroom events/actions, (ii) the planning that precedes these events and actions, and (iii) the understanding/interpretation that follows them" (Woods, 1996, p. 81). According to Woods (1996), the planning/expectation of classroom events depends on teachers' belief system and background knowledge structures, which involve knowledge of plans, goals, the world, the culture, the language script, and relevant contexts. Classroom actions are carried out with the intention of operationalising the plans. What happens in the classroom adds to the teachers' understanding/interpretation. The three elements interact with each other and form a coherent psychological system of teacher cognition.

To sum up, a common consent in the present literature is that teacher cognition is mainly composed of teachers' belief system which is composed of their attitudes, assumptions, beliefs, knowledge, and how this belief system influences their teaching behavior.

However, one problem with existing studies of teacher cognition is that teachers' belief system and their teaching behavior are only studied at individual level.

The social level of teacher cognition is largely neglected. According to Vygotsky's (1978) cultural-historical psychology, teaching practices are more collective activities than individual behaviors.

## **Teacher cognition: Distributed collective cognition among members of a community of practice**

Teacher cognition is co-constructed by each individual teacher with other members of community of practice. Three concepts articulated by Vygotsky (1978) are especially helpful in understanding the process of the collective cognition: socially constructed activity, internalization and externalization, and mediation. Besides, the notion of community of practice provided by Lave and Wenger (1991) also supports this understanding.

### ***Socially constructed activity***

According to Vygotsky (1978), human cognition is a collective and shared activity. It first happens between individuals and then within individuals.

Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). (Vygotsky, 1978, p. 57)

Therefore, research on human cognition should involve the two levels: social and individual. The former level can be addressed by the study of an individual's activity within its social context or its activity system. The latter level can be addressed by the study of the process of internalization and externalization.

### ***Internalization and externalization***

Vygotsky (1981) points out that human cognitive activity involves two parts: internalization and externalization. In the process of social practice and interaction with others, individuals internalize reality in their minds to update their original stage of cognition. The new stage of cognition, in turn, is externalized to guide their new verbal or nonverbal practice as guidance. Both processes of internalization and externalization are processes of creation and transformation of one self and the environment in which one acts. Both processes are related to each other and transformed into each other, thus forming a circle of cognitive process. Internalization is not a copy of reality, nor is externalization a mirror of individual cognition. Both processes are mediated by tools and artifacts.

### ***Mediation***

Mediation is one of the fundamental concepts of Vygotsky's (1978) theory. It emphasizes the influence of culture on an individual's mind and action. As social beings, "humans do not act directly on the physical world" (Lantolf, 2000, p. 1). Rather, their action is based on reasonable plans which are developed psychologically by using cultural tools such as language, concepts, systems, and so on. These cultural tools "mediate the relationships between people, between people and the physical world, and between people and their inner mental worlds" (Lantolf, 2006, p. 69). This culturally mediated rather than mere biological action help humans "avoid potentially dangerous situations" (Lantolf, 2006, p. 70).

In sum, social interaction plays a significant role in the process of cognition. Human cognition cannot be studied in isolation of its sociocultural environment. Therefore, teacher cognition involves both individual levels and social levels. The individual belief system and practice system are always socially constructed and mediated both individually and collectively. To explore the collective nature of teacher cognition, the notion of community of practice is to be introduced and its difference between discourse community and speech community will be explained

### ***Community of practice***

Lave and Wenger (1991), provide the following definition of community of practice:

In using the term community, we do not imply some primordial culture-sharing entity. We assume that members have different interests, make diverse contributions to activity, and hold varied viewpoints. In our view, participation at multiple levels is entailed in membership in a community of practice. Nor does the term community imply necessarily co-presence, a well-defined, identifiable group, or socially visible boundaries. It does imply participation in an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their communities. (pp. 97-98)

According to this definition, a community of practice is bounded by the activity system in which members of the community are all engaged. A community of practice is both durable and dynamic. With regard to the former, operations, stereotypes, and regulations are developed from years of practice and are not easily subject to change. On the other hand, the culture of a community is dynamic in that it is a process of continual negotiation and co-construction through the joint effort of its numbers.

Community of practice is different from discourse community or speech community in that they have different focus: the former focuses on practice, the later two focus on language.

Swales (1990) lists six features of discourse community:

1. A discourse community has a broadly agreed set of common public goals.
2. A discourse community has mechanisms of intercommunication among its members.
3. A discourse community uses its participatory mechanisms primarily to provide information and feedback.
4. A discourse community utilizes and hence possesses one or more genres in the communicative furtherance of its aims.

5. In addition to owning genres, a discourse community has acquired some specific lexis.
6. A discourse community has a threshold level of members with a suitable degree of relevant content and discursal expertise. (Swales 1990, pp. 24-27)

According to Swales (1990), both speech communities and discourse communities are based on shared rules of communication. However, speech communities differ from discourse communities in that the former refers to groups of people who interact with each other orally for the purpose of socialization in their local contexts; the latter refers to those who communicate by texts written in one or several genres which is/are accepted by their members. Swales (1998) further divides discourse communities into place discourse communities and focus discourse communities, with the former emphasizes local participation for mutual project, the latter stresses the common interest among the members of a discourse community. This division indicates that a discourse community can be either local or global. Swales (1998) also points out that "The place discourse community (PDC) obviously has some affinities with the 'community of practice'" (p. 202).

The common features between the community of practice and the place discourse community are that both emphasize the engagement of mutual project in a local context and both involve language and activity. However, Language is a tool, rather than the focus, for members of the community of practice. People who belong to one community of practice may belong to different discourse communities. The concept of community of practice is important for the research of teacher cognition because teachers' practices in a certain context are always influenced by the distributed collective beliefs among the members of the community of practice.

### **A community of teaching practice**

Though originally community of practice is a term for a theory of learning, it is significant in the study of teacher cognition in that teachers' knowledge and beliefs are evolving with their participation in the activities in the teaching communities and the interaction with other members. In this sense, teaching is also a way of learning. Therefore, a community of teaching practice within a university is an organized group of people which is primarily composed of teachers and students, with the support of other members of the organization such as administrators and other specialist professionals.

The culture of a community of teaching practice within a university includes two parts. The first is explicit artifacts, regulations, visible behaviors of academic practice such as activities, actions and operations of teaching, learning and assessing which are more easily observed. It also contains explicitly expressed statements of beliefs and values of the role, methods and standards of teaching and learning. The second is an implicitly accepted culture of learning and teaching which involves usually unspoken assumptions about the purpose and appropriate ways of practice, the understanding of academic requirements, relationships and the routine operations of practice.

A teaching community has a common goal and shared information (e.g. regulations) and routines in order to achieve the goal. Language is a tool or instrument. Both the tools that teachers use and the context within which teachers work mediate or influence their teaching practices. Individual teachers are regarded as part of the community of teaching practice rather than isolated individuals. Teachers are subjects who conduct actions according to the division of labor in the community to achieve the expected goal. The relationship between the subjects, objects and the community form the whole context of teaching and learning.

### **Activity theory: A frame work of exploring teacher cognition at both individual and social level**

Activity theory is based on Vygotsky's cultural-historical psychology which emphasizes the role of social interaction in the development of cognition. The notion of activity theory was first articulated by Leont'ev (1978) and then expanded by Engeström (1987).

The original model of activity theory is developed by Leont'ev (1978). He makes clear distinction between activity, action, and operation, which form a three-level model of activity. He explains his model by an example of a group of primitive people carrying out the activity of hunting. The subject in this model is composed of a group of hunters. The object is the animal. With the help of tools or mediators, such as language and hunting equipment, the subject makes the transformation of object. The outcome is the result of the transformation---the animal is killed. However, Leont'ev' s model is too simple to show the complex relation between different components in an activity system and the relation between activity systems.

Accordingly, Engeström (1987) has developed the basic model of activity theory and details the components in an activity system (Figure 1). This model distinguishes individuals from the community, and demonstrates the interaction between different components within the system.

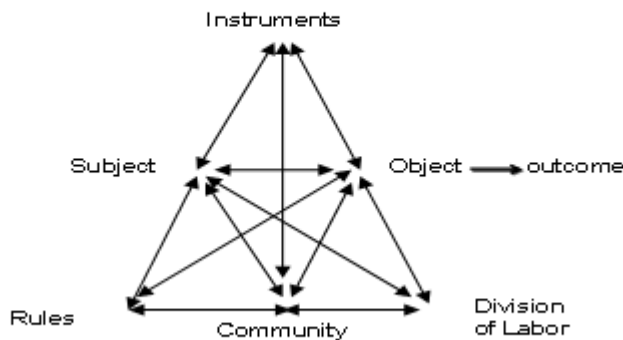


Figure 1. Engeström's model of activity system (Engeström, 1987, p.78)

Engeström and Miettinen (1999) provide a detailed explanation of this model:

The uppermost level of collective activity is driven by an object-related motive [or objective]; the middle level of individual or group action is driven by a goal; and the bottom level of automatic operations is driven by the conditions and tools of action at hand (p. 4).

According to Engeström (1999), an activity system is not isolated from other systems. A new generation of activity theory should be developed to understand the interaction between activity systems. Engeström's (1987, 1999) expanded model is helpful to the holistic understanding of individual cognition in relation to its context.

### **Methodological advantages of using activity theory in the research of teacher cognition**

A key advantage of activity theory is that it takes an activity system as a unit of analysis, which is a solution for a common problem in case studies. "It is the unit of analysis that defines the case" (Merriam, 2002, p. 8), yet it is often hard to set the "boundaries" of the case (Denscombe, 1998, p. 40). Generally speaking, a case itself is regarded as an integrated system and a bounded unit of analysis (Merriam, 1998, 2002; Stake, 1995). However, there appears to be little literature about why an individual or a community or an institute can be regarded as a bounded system or unit of analysis, and how to analyze this unit as a system, whether the system is interacted with other systems, and how to set the boundaries of different sources of data. These problems can be explored by activity theory, which defines the unit of analysis as an activity system. In this way, individuals are able to be analyzed in its relation to other factors within the system.

Activity theory justifies two common issues raised for the evaluation of qualitative research: researchers' subjectivity and the difficulty of making generalization (Denscombe, 1998). The researcher's subjectivity is considered as a contribution to the research project because the researcher, in this instance, is a peripheral member of the two communities and is also one of the connections of the two communities to a broader sense of communities of practice. The result of the research is a result of a co-construction between the researcher, the participants and other members of the communities. The second point, generalization, is a standard used to evaluate quantitative research. This qualitative research does not aim for generalization: rather, it aims to get in-depth understanding and explore grounded theories from this specific context. However, the implications of this study go beyond the specific context in that the activity systems studied in this research are related to other activity systems which are concerned with similar academic issues and pedagogical practices.

### **Teacher cognition of giving feedback: A common yet under explored area**

Teacher response has long been regarded as "one of the most important and time-consuming aspects of teaching writing" (Silva & Brice, 2004, p. 78), yet has been researched with very limited studies (Silva & Brice, 2004). Beliefs and practices on written feedback is the most controversial area in writing instruction, especially as regards L2 writers (e.g. those who are writing in a language other than their own). Research findings of teachers' practice of giving feedback are contradictory. Three issues are at the focus of discussion: 1) whether error correction should be the focus of feedback; 2) the appropriate forms of written feedback; 3) whether feedback is effective and what effects it has.

### ***Focus of feedback***

In the early stage, feedback focused on error correction. Many researchers insisted on the importance of error correction to L2 writers, whose opinion was supported by survey results that L2 students demanded it (Cohen, 1987; Ferris, 1995; Hedgcock & Lefkowitz, 1994). Besides, it was revealed by studies that L2 teachers of different subjects tended to be "less tolerant" (Ferris 1999, p. 8) of errors made by L2 students than those made by L1 students. Consequently, the overall assessment of L2 students' assignments was negatively affected. Moreover, it was also believed that error correction was an approach to help students learn how to self-edit their assignments (Ferris, 1999). However, some researchers (e.g. Truscott, 1996) believed that feedback on error correction was of no use and rather, teachers should focus on the content of the writing assignments. Besides, research shows (Ashwell, 2000; Ferris, 1997; Ferris, 2003; Ferris & Hedgcock, 1998), that many teachers give both global and local feedback (Ferris, 2003)

### ***Forms of feedback***

Error correction has been the focus of feedback to L2 writing. It has two forms: direct and indirect. Direct corrective feedback refers to a kind of feedback in which errors are identified and corrected with or without explanation (Ferris, 2003; Bitchener, 2008), while indirect corrective feedback means errors are indicated without being corrected. Bitchener (2008) summarized four ways of indirect corrective feedback: "underlining or circling the error; recording in the margin the number of errors in a given line; or using a code to show where the error has occurred and what type of error it is" (p. 105).

Keh (1990) pointed out that students need explicit and detailed comments on both strong points and weak points of their writing. Mirador (2001) studied thirty feedback texts by seven tutors and summarized a twelve-move genre of feedback. The linguistic forms in each move were also analyzed and three patterns of feedback were found. But the most valuable aspect of the research is that she raised the issue whether the feedback should be writer-based (e.g. sharing of linguistic and discursal knowledge of members of this same community influenced by its own 'socio-cultural schema') or reader-based (e.g. conscious sharing of linguistic and discursal knowledge of members of this community as influenced by expected perceptions of the receivers of the feedback.) (p. 59).

### **Effects of feedback**

A large group of studies have demonstrate positive effects of error correction (Bitchener, 2008; Chandler, 2003; Fathman & Whalley, 1990; Ferris, 1999, 2003, 2004, 2006; Ferris & Hedgcock, 1998; Leki, 1990), while others like Truscott (1996, 1999, 2007) argued that error correction should be discarded because of its ineffectiveness or even harmfulness.

According to Truscott (1996), feedback could hardly have any practical effect in that teachers often had limited knowledge, ability, time and effort to provide appropriate feedback and explanation on grammatical errors. Students may not understand some feedback (Ferris, 1995, 1998; Goldstein 2006; Hyland & Hyland 2006), or may not correct the errors actively due to psychological issues and the influence of their previous knowledge and habits of writing. He believed that grammar correction could only produce “pseudolearning” (p. 347) in that it was hard for teachers to provide grammar correction according to each learners’ “developmental sequence” (p. 344) and their learning process which was complex and not easily understood. It was new knowledge of grammar that could not be synthesized into learners’ knowledge system. Therefore, Truscott (1996, 1999, 2007) claimed that error correction was harmful and shouldn’t be involved in feedback.

In responding to Truscott (1996), Ferris (1999) emphasized that the practical problems could be solved by “preparation, practice, and prioritizing” (p. 6), which meant teachers should be well prepared with sufficient subject knowledge and pedagogical knowledge of teaching L2 students, have enough practice, and the ability of focusing on major errors each time. She also mentioned the effectiveness of a training program of giving feedback to grammatical errors.

Truscott (1999) appropriately claimed that his debate with Ferris is valuable in that it provides choice for teachers in their decision making. The questions of what decisions teachers make on this issue, how these decisions affect their teaching practice and their effects should be addressed by further research.

To sum up, feedback is an important teaching strategy in writing instruction. However, the literature shows different opinions on written feedback on students’ assignments. If explored from the perspective of teacher cognition in communities of practice, the reasons for the different opinions and the potential mismatches between beliefs and practices will become evident.

### **Exploring teacher cognition of giving feedback on students’ written assignments: A research design based on activity theory**

As is pointed out by Engeström (1999), an activity system is often related to other activity systems. A good example is the activity system of EAP teachers and that of subject tutors at universities. The following is a model of the activity system of EAP teachers and subject tutors.

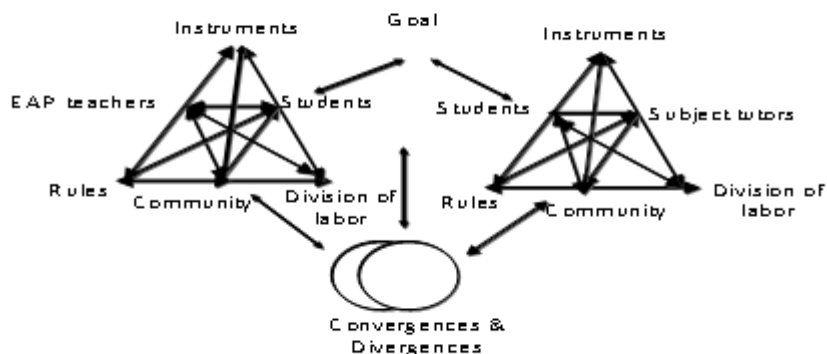


Figure2: A model of the activity system of EAP teachers and subject tutors

As is depicted in Figure 2, EAP teachers and subject tutors who participate in the same activity system belong to the same community of practice yet different discourse communities. Therefore, the word community in this model has dual meanings: community of practice and discourse community. The triangle of EAP teachers and that of subject tutors compose the same activity system. They share the same object: students who are engaged in writing courses have written assignments for other courses as well. Thus these students are assisted by both writing teachers and subject tutors. The common goal of EAP teachers and subject tutors is to help these students meet the required standard of academic writing. This activity system is expressed by two triangle systems because EAP teachers and subject tutors belong to different discourse communities. This difference contributes to the divergences between the beliefs and practices between EAP teachers and subject tutors.

It is assumed that there are convergences and divergences at different levels in teachers' and tutors' beliefs and practices. This can be examined at three levels: within individual teachers and tutors, between individual teachers and their community, and between the two communities.

Convergence can be identified at different levels because teachers' beliefs are not easily changed. Their practices are guided by their beliefs. Besides, individual teachers'/tutors' beliefs partly come from their community of practice. There are some commonly agreed practices of giving feedback on students' written assignments. Moreover, both teachers and tutors share some common instruments and rules (for example, the use of coding systems, oral conferences, etc.) in the same university. Therefore, there should be overlaps between the beliefs of the two communities.

However, it is also assumed that divergences exist at each level. A teacher/tutor who belongs to one activity system is at the same time influenced by other activity systems in which he/she participates. This external influence causes imbalance within and between components in an activity system, and between different activity systems. There is also internal change within an activity system. Imbalance caused by changes is called contradiction in activity theory (Engeström, 1999). The contradiction can be reflected by divergence at the four levels. It can be the divergence of teachers' or tutors' beliefs and practices over time, the divergence between beliefs and practices, or divergence between individual teachers'/tutors' beliefs and those of their respective community, and the divergence between the two communities.

In sum, traditional theories of teacher cognition tend to neglect the context and dynamic features of teacher cognition. This weak point can be compensated by activity theory which connects cognition with practice, individual with community, and related communities. It enables the



researcher to study teacher cognition in its socio-cultural context to get deeper understanding of the sources of cognition.

### ***The research questions***

-What do EAP teachers and subject tutors in the specific context believe in giving feedback to L2 students: the general routine, content, and strategies?

-Why do they give feedback in that way? What are their explicit and implicit theories that are underlying their practices?

-What are their actual practices when giving feedback?

-What is the convergence and divergence between their beliefs and actual practices in each group?

-What is the convergence and divergence between the two groups?

-How does the convergence and divergence address the primary aim of the research, that is, to add to academic understanding of what constitutes teachers' beliefs, the underlying sources of those beliefs, and the possible tension that arises in putting these beliefs into practice?

### ***The participants***

Participants of the research are EAP teachers and subject tutors at a university. The number of the participants is limited by local context. The teachers and tutors belong to different discourse communities, yet they share the same students. They are members of the same community of practice, working within the same activity system. They have to abide by some common academic, pedagogical, and institutional rules and share some academic and pedagogical knowledge of good practice of giving feedback, but they are likely to have divergences in their belief and practice because of different life and academic experiences and different division of labor. However, they all have to help students improve their writing by giving feedback. These convergences and divergences contribute to the complexity of educational reality in this local context.

### ***Data collection methods***

As is explained in the above models, the activity of giving feedback, like other activity systems, also falls into three levels—activity, action, and operation. To explore teacher cognition at the three levels, semi-structured interview, think aloud protocol, and stimulated recall methods are used to collect data.

Semi-structured interview is used to explore teachers' beliefs of giving feedback as an activity. Interview questions will focus on what teachers believe of giving feedback and the sources of their beliefs. Following the semi-structured interviews, think aloud protocol method will be used to get data of operations of giving feedback while they are actually giving written feedback on samples of their students' written assignments. During these sessions, the researcher will either be a non-participant observer who will not ask any questions, or else will provide limited verbal cues to prompt the participants to think aloud. Shortly after think aloud sessions, stimulated recall will be carried out to explore teachers' consciousness of actions they take while giving feedback.

These procedures (think aloud and stimulated recall sessions) will occur over the course of a university semester. Each semi-structured interview, think aloud and stimulated recall session will last between thirty and sixty minutes. All interviews will be audio recorded. After each session, audio-taped data will be transcribed and then summaries of the interviews will be sent to the participants for their respondent validation. It may be the case that questions on some major issues will be sent to the participant (perhaps by email) to invite more reflective thinking on the issues that might be helpful for the researcher.

Besides, data collection also includes the collection of written documents such as course outlines and written criteria tutors might use in feedback given to students' assignments, and field notes of observation by the researcher during think aloud.

### **Data analysis**

Data analysis includes different level of comparisons within and between the two activity systems to reveal the influence of different components on the subject issues. Interview data will be transcribed first, then the transcribed data as well as the document data will be subjected to grounded analysis of constant comparison and contrast, possibly using the qualitative data analysis program/tool Nvivo to identify code categories of emerging patterns, and to facilitate the exploration of the extent of convergence and divergence of individual teachers' beliefs and practices. Then comparisons can be made within and between the groups.

### **Conclusion**

This paper argues that teacher cognition should be studied at both individual and social levels, and Activity Theory provides the potential of so doing. A good example of using activity theory in the exploration of teacher cognition is studying teacher cognition of giving feedback on written assignments which is one of the most common and important activities carried out by teachers. It is significant in four aspects: Firstly, literature shows different opinions on written feedback on students' assignments. If explored from the perspective of teacher cognition, the reasons for the different opinions and the potential mismatches between beliefs and practices will become evident. Secondly, feedback as a teaching practice reflects teachers' beliefs. Interpretation of beliefs and practices of different communities of teaching practice in specific contexts can reveal the relationships between different factors that influence teachers' beliefs and practices, contributing to the literature and promoting understanding and communication between different communities and among members of communities. Thirdly, by applying activity theory, community of practice and discourse community to the study of teacher cognition, teacher cognition theories will be expanded. Finally, the paper argues that the study of teacher cognition of giving feedback in an activity system not only contributes to the understanding and improvement of teaching practices in the local context, but it is also relevant to those who study human behavior within other activity systems and thus can be applied to the study of other professional activities.

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