

# **Teaching as Assisting Others' Performance**

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## **Abstract**

The emergence of the internet has created accessibility and opportunities for teaching and learning. Nowadays, computer-mediated communication (CMC) is widely used in online learning environments in a vast number of higher education institutions. This article reports findings from a study that investigated the implications of participation in online discussions for the role of teaching. The aims of the study were: 1) to examine tutor-student and student-student interactions for evidence of 'assistance' in the postings to a 'Discussion Board'; and 2) to explore the tutor-student and student-student assistance patterns in the Discussion Board postings, associated with different task types. The underlying premise in the study was a unified theory of teaching and education which draws on the work of L.S. Vygotsky and neo-Vygotskian researchers and offers a theorization of teaching as assisted performance. This idea articulates and conceptualises a form of teaching that is not just evidenced in the tutor's role but also amongst the students. Sociocultural theory also proposes that to understand students' learning in CMC, it is necessary to study the social interactions of teaching and learning that occur in the online environment. Data collection and analysis were carried out in two stages that included: 1) content analysis to explore the nature of assisted performance provided in the Discussion Board, according to participants' role and task types; and 2) mapping the interactions and describing the patterns by using a social network approach. The categories of Scaffolding, Feedback on Performance, Cognitive Structuring, Modelling, Contingency Management, Instructing and Questioning, were used to analyse the message postings, or means of assistance in CMC. Through the analysis, we aimed to obtain an understanding of the nature of assisted performance and pattern of interactions among two groups of a Masters programme in a public university. Analysis revealed that 'teaching' was evidenced in the students' role, however, the pattern of assisted performance by peers or a tutor depended on one or more of the following factors: type of task (the nature of task initiated), group formation (either one large group or several small working groups) and tutor management (the degree of tutor involvement in responding to students' posting).

## **Keywords**

Social network analysis (SNA), Computer-mediated communication (CMC), Assisted Performance, Sociocultural.

## **Introduction**

A study was conducted to investigate the occurrences of 'teaching' behaviour in peer learning in the context of online discussion, how such behaviours differ from tutors' behaviours, and how their roles are enacted within different educational tasks. Having defined teaching as assisted performance (Tharp and Gallimore, 1988), the study included an investigation into the occurrence and nature of assisted performance in CMC in higher education courses that used CMC to extend face-to-face discussion. We were also interested in investigating how assisted performance in CMC is affected by task type, including the pattern of interactions in tutor-student and student-student communications.

The literature centred on five main themes. The first theme discussed the assumptions about collaborative interactions and how understanding these assumptions can help to frame the role of peer teaching. The second theme included detailed description of different terms used in relation to assistance, conceptualisation of terms, and what earlier research studies have reported. Another theme addressed the roles of the tutor and students in online environments and discussed the particular conditions that have changed tutor and student roles. The

fourth theme centred on differentiation of tasks, i.e. the different nature of task modes (open as opposed to closed) as it is believed that assisted performance can be affected by task mode. As this study attempted to map the interactions of participants in order to understand the pattern of exchanges and allocation of assistance, the social network approach was used in order to reveal the social structure. The last theme included a review of social network theory and related research findings on the social network approaches that analyse social structures in online learning communities.

### **Studies of Interaction**

A number of studies have been carried out to investigate interaction in online learning contexts. These studies include looking at dimensions of interaction in the learning process (Henri, 1992), making associations of interaction to knowledge construction (Allan, 2004; De Laat, 2006), attitude and motivation (Fulk *et al.*, 1987; Lee *et al.*, 2003) and performance (Daradoumis *et al.*, 2003; Davies and Graff, 2005). The conceptualisation of the term ‘interaction’ therefore, to some extent, is powerful and important. The distinction is between interactions *around* the computer and interactions *through* computers (e.g. networked communications) (Littleton, 1999).

Daradoumis *et al.* (2003) applied ‘interaction’ differently than Davies and Graff (2005). Instead of identifying the quantity of interactions, Daradoumis *et al.*’s research study focused more on the interaction quality, i.e. by quantifying the number of events of behaviour in interactions. The analysis examined how groups function in online learning environments and how that relates to collaborative performance. They stated that interaction behaviour portrays the way a group (of students) functions as a cohesive collaborative learning team. They added that the individual and group problem-solving capabilities and performance in task accomplishment could be related to interaction behaviour. From these two examples, interaction can be understood as being as simple as the amount of contact and as complex as a set of behaviours. These two approaches, however, do not give us a complete understanding of what occurs in the interaction. What is the proper conceptualisation for interaction if we look at the *quality of communication* for learning in an online environment? Based on Forman and Cazden’s study<sup>1</sup> (1985: 333), three styles of interaction are at play when children work on problem-solving tasks. It is suggested that the capability of more advanced partners to provide support at an appropriate level is an important feature of the interactional style. Based on such assumptions of interactional styles, participants’ interactions in online discussions can be understood as:

- a parallel form in which there is no exchange: an isolated message that does not get any response from other participants;
- an associative form, in which the participant tries to exchange information but does not attempt to coordinate his or her role: a message which contains the participant’s concern about the task and content or responds to a particular posting, for example, answering a tutor’s question;
- a cooperative form, in which both participants constantly monitor each other’s work and play coordinated roles in carrying out the tasks – messages which contain the participant’s assistance.

### **Teaching as assisting performance**

The underlying premise in this study is a unified theory of teaching and education which draws on the work of L.S. Vygotsky and neo-Vygotskian researchers and offers a theorization of teaching as assisted performance. This idea articulates and conceptualises a form of teaching that is not just evidenced in the tutor’s role but also amongst the students; “assisted performance identifies a fundamental process of development and learning” (Tharp and Gallimore, 1988: 20). Tharp and Gallimore (1988) have defined teaching as assisted performance. Teaching can be said to occur when assistance is offered at points in the Zone of Proximal Development (ZPD) where performance requires assistance (Tharp and Gallimore, 1988: 30). In today’s ‘new’ environment for learning (i.e. the online learning environment), there is a need to redefine what teaching is. This transfer of the concept of teaching from the classroom context to the online contexts has potential application as the learning process in both contexts may involve peers ‘teaching’ each other by offering assistance.

### **Open and Closed Tasks**

The main way of categorising tasks during the early stages of this study was heavily influenced by the VLE literature of how practitioners develop and practice ‘activities’ in this environment. However, despite the use of this

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<sup>1</sup> Forman and Cazden’s profound idea of interactional style is largely seen in studies of interaction behaviour in face-to-face contact and also is used in the virtual contact.

categorisation, some additional characteristics emerged during this study, such as: “The development of the research strategy grows gradually with the process of learning about the research setting” (Holliday, 2002: 64). As the characteristics of ‘open’ and ‘closed’ emerged, this category was used to differentiate various task types. However, the primacy of the first categorisation of the task type is questionable as each task is dynamic. There is always an overlap of definitions and practices. Therefore, another way of identifying or classifying the task type will benefit, sharpen, and hone our understanding. Although there is no literature on ‘openness’ and ‘closedness’ in this field of VLEs, these concepts have been used in the fields of language learning and science learning. An ‘open’ task might refer to activities, which were literally ‘open-ended’, in that there were a number of acceptable end-points (as in Jones *et al.* 1992).

### **Social Network**

When humans interact with each other, they are in a social network. In describing the social network of learning communities, Haythornthwaite suggests that:

Learning is a social network relation: it is a transaction, an exchange between people as one person teaches and another learns; it is a shared experience as colleagues explore a new area, define terms, and create common ground; and it is a common experience as students attend classes and lectures together gaining a similar view of the subject and profession. Learning involves the transfer of information from one person to another, but it also involves feedback, questioning, and collaborative inquiry. It involves information, but also includes transfer of academic and professional norms, and teaching and acquisition of skills in writing, using equipment, carrying out procedures, and learning to learn. Learning may stand as the only connector between two people, or it may be combined with friendship, social support, and more general advice. Learning jointly around a common interest can foster a sense of community, with benefits to individuals to their personal well-being, and to the community in advancing joint knowledge, sustaining participation, and promoting continued existence (Haythornthwaite, 2005)

In e-learning, the underpinnings of social networks could be demonstrated with these three elements: *actors*, *relations* and *ties*. The *actors* are the nodes in the networks such as people, computers, websites, concepts, or institutions that interact, exchange and maintain relationships with each other and with the group, i.e. among peers, tutors and administrator of the online systems. The *relations* are the connectors between nodes, which are specific kinds of exchanges that form connections between *actors*. A *relation* could be instrumental or socio-emotional where the action of *relation* may include teaching and learning, social support, instrumental exchanges, collaboration and so on. In this study, assisted performance was found in the *actors’* exchanges. While the *ties* are the connections found in *relations*, a pair of *actors* is considered to maintain a social network *tie*.

In a university course that implements the adjunct mode of online learning, the tutor and the students are the *actors* in the social network. They have a shared understanding and experience in order to carry out the task and subject areas. In the process of obtaining and maintaining ‘intersubjectivity’, the *actors* exchange or make transactions of information: one delivers and others receive and decide whether to respond or not. (In this study ‘intersubjectivity’ refers to students’ behaviour in achieving common ground in their understanding of the subject matter, how to satisfy the task and so on). The ideal of ‘learning networks’ provide the opportunity for a rich interchange of information and ideas in which all students can participate actively, learn from one another as well as from the teacher’ (Harasim *et al.* 1999: 173). This indicates that learning normally occurs in learning networks when:

- there is an interaction with exchanges of information
- these exchanges are taking place between student-student or tutor-student
- the opportunity for each participant is equal: meaning that there is no hierarchal status of role
- the teacher as well as the students learn from the contributions made by the group
- the quality of learning more or less depends on the quantity (active participation) and quality (rich interchange of information) of exchanges

In such activities, there will be conditions or situations where assistance is needed, in both implicit and explicit ways. An implicit way might be when there is a conflict in maintaining intersubjectivity and an explicit way might be when the actor is asking for or seeking assistance. Implicitly, at the very beginning of the exchange, any posting could be viewed as assistance to someone else. Explicit and implicit assisted performance is a continuing process until the *actor* perceives that s/he has obtained intersubjectivity. As different *actors* have different paces in achieving intersubjectivity, the actions of assisted performance are seen in the exchanges that

occur almost all the time throughout the course. It is the *relations* of assisted performance through discussion that drives the *actors* to maintain the *ties* between them. Without assisted performance, there will be no meaningful, observable exchanges in discussion.

## Methodology

The aims of the study were: 1) to examine tutor-student and student-student interactions for evidence of ‘assistance’ in the postings to a ‘Discussion Board’; and 2) to explore the tutor-student and student-student assistance patterns in the Discussion Board postings, associated with different task types. As the study set out to investigate the behaviour of ‘teaching’ in online discussions, we needed to extend the conceptualisation of teaching as assisted performance, which included people who were not necessarily assumed to demonstrate such behaviour. In so doing, messages collected from a series of discussions held in a Masters programme were coded by categories of assisted performance (by Kirkley *et al.*, 1998). We used the following categories to analyse the message transactions, or means of assistance, in an Learning Management System (LMS) ‘Discussion Board’ developed by Gallimore and Tharp (1990) and adapted in Kirkley *et al.* (1998). They are: Scaffolding, Feedback on Performance, Cognitive Structuring, Modelling, Contingency Management, Instructing and Questioning. As learning takes place through social interaction (sociocultural perspectives), patterns of assisted performance were mapped through social network analysis.

The study sample included 48 participants consisting of 36 students and 12 tutors. The 36 students represented two groups of 19 and 23 students, respectively. The focus was on the participants that used CMC in the context of a Masters in Education programme. Here, CMC was used as a communication tool, extending face-to-face (or classroom) discussion, and was used in an adjunct mode<sup>2</sup>. Students were instructed to use LMS as part of the support system for the programme. The overall number of messages collected was 526. The study relied on the messages as primary data. The messages were analysed in three ways:

- 1) through content analysis to obtain their frequencies;
- 2) through interaction maps to virtualise tutor-student and student-student interactions (see Appendix for example of mapping);
- 3) through social network analysis to discuss the interaction patterns in different task types.

To obtain the first aim, offering and giving assistance, as captured in the messages, were considered as evidence of teaching in this context. Content analysis was used to investigate the circumstances of assistance through discussion. All circumstances of assistance, such as the total number of incidents of assistance and types of assistance by group (units), role and different task types were counted and examined. Content analysis was performed on all the messages in the ‘Discussion Board’ for all courses selected. Quantitative analysis of the data, through regularities or frequencies, showed the nature of assistance in tutor-student/s and student-student interactions.

For the second and third aims, investigation of interactions was conducted to get a holistic overview of the community of practice in the online learning environment. In particular, tutor-student and student-student interactions when providing assisted performance in the social network of the learning community were examined. The interactions were observed and mapped out to understand the assisted provision patterns of each course. Mapping strategies have been influenced by studies of Granovetter (1973) and Henri (1992). The mapping allowed us to illustrate the possible patterns of peer- and tutor-assisted performance in online discussion through observation and capacity of assistance in the interactions. They were distinguished by the terms task ‘openness’, tutor management and group formations (working in one big group or in several small groups).

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<sup>2</sup> An adjunct mode (as in this study), occurs when students in a course use CMC through an online delivery system as an optional rather than a compulsory learning activity (Harasim *et al.*, 1999).

## Summary of Findings

**Table 1: Comparison of assistance by different role of participants in open and closed task (overall and %) in Year 1**

Mode of Discussion	Assistance from tutor (%)	Assistance from student (%)	Total (%)
Open	217 (69.3)	96 (30.7)	313 (58.8)
Closed	150 (68.5)	69 (31.5)	219 (41.2)
<b>Total</b>	<b>367 (69.0)</b>	<b>165 (31.0)</b>	<b>532 (100)</b>

Overall, tutors gave more assistance (69.0%) than students (31.0%), whether the task was open or closed, although both groups were more likely to give assistance in open tasks (58.8%) than in closed tasks (41.2%).

**Table 2: Comparison of assistance by different role of participants in open and closed task (overall and %) in Year 2**

Mode of Discussion	Assistance from tutor (%)	Assistance from student (%)	Total (%)
Open	172 (53.6)	149 (46.4)	321 (81.7)
Closed	27 (37.5)	45 (62.5)	72 (18.3)
<b>Total</b>	<b>199 (50.6)</b>	<b>194 (49.4)</b>	<b>393 (100)</b>

The Table above shows that the differences in the number of assistance by tutor and students are small in open mode (53.6 % and 46.4%) whereas in closed mode, students gave considerably more assistance. In Year 1, tutors gave more assistance than students in both open and closed tasks, but in Year 2, the difference was slightly smaller (50.6% and 49.4%) overall. In Year 2, the students gave more assistance (62.5%) than the tutors (37.5%) in closed mode tasks. The number of assistance in open task increased in Year 2 in contrast to Year 1 from 58.8% to 81.7% (see Table 19). The number of assistance in closed discussions dropped from 41.2% in Year 1 to 18.3% in Year 2.

It cannot be concluded from this analysis that assistance, either from the tutors or from the students, is directly related to the task type, as there no concrete pattern of participants' role in providing assistance in different task types. However the open tasks do tend to elicit more instances of assistance in both cases.

In terms of the first aim, the analysis revealed evidence of assisted performance in the group under study. Assistance was more likely to be found in the tutor's messages rather than the students'. Open task discussions promoted more instances of assistance as compared to closed task discussions. Furthermore, there was a similar pattern in the distribution of type of assistance across the groups. The tutor provided more assistance than the students in both open and closed task discussions. However, there was no connection or relation of assistance provided by the students relative to the tutors' assistance in either open or closed task discussions. Thus, it seemed that student assistance did not merely model the assistance provided by the tutor.

For the second research aim, in terms of the social network in different task types, patterns are as follows: In Year 1, more assistances were provided by the tutor, i.e. tutors had the *central* role of giving assistance in both open and closed tasks. This pattern changed with Year 2, where the *central* role of giving assistance in open tasks were performed by both the tutor and the students (as there were not much difference between the two), but in closed tasks, students had the *central* role of giving assistance. This finding indicates that the *central* role of providing assistance in the closed mode for students changed over time.

Sociocultural learning theory suggests that learning could be enhanced when performance is assisted through interaction in the learning process. Therefore the ideal model of learning through discussions is that there are strong *ties* of assistance provision and interactions between students. However in practice, it is rare to find strong *ties* of assistance provision in student-student interactions in the discussions. The analysis revealed that the pattern of assisted performance by both peers and tutor depended on one or more factors: type of task (the

nature of task initiated - either open or closed task), group formation (either one large group or several small working groups) and tutor management (the degree of tutor involvement in responding to students' postings).

## **Implications of the Study**

We discovered that different nature of tasks will lead to different patterns of responses and participation. The patterns, however, are not straightforward as they depend on certain factors or conditions. One way that we can distinguish between the different natures of tasks is by their degree of 'openness and closedness'. Such differences, as defined in this manner, seem to lead to differences in the nature of responses as well as how related discussion tasks are carried out. Therefore, we cannot simply give instructions to carry out a task to students without thinking about the implications of the openness or closedness of the task on their behaviour.

From the results, we suggest that course design allow the role of assisted performance to be taken up by the students along with the tutor. If the course contains a mix of face-to-face and online sessions, the online session should give considerable room for the students to actively take control of their learning, while remaining 'closely' monitored by the tutor. When students are in face-to-face sessions, opportunities for assisted performance are limited if the session is conducted in a hierarchal nature, if there are time constrains or if the students are unwilling to take charge. It is in the online medium where such limitations can be reduced. Tutors should not have to respond to all of the students' concerns, but rather encourage peer assistance. Only if activity is at a minimum should the tutor model behaviour such as giving feedback for structuring students' thinking. Tutors should also encourage students to view interaction with other students as a valuable part of their learning. After all, an important part of what they do is questioning, and effective questioning makes everyone think.

One should also consider how the students work together when designing the adjunct course, in particular whether they work collaboratively or cooperatively. When the task in the online discussion is open in nature, the group will benefit in terms of having more room to post their concerns.

If the tutor plans to have smaller groups (two to three members), and the task is planned to be carried out in a closed mode, the task should have specific goals, processes and outcomes. Students should have a clear idea of what to do; they can arrange the various responsibilities amongst themselves and understand the expected product. As the task becomes more certain, the concerns that might emerge from students are also more specific as compared to those in a larger group. Furthermore, the topics are more familiar amongst the group members. For example, a task might be to read on a particular topic. As everybody is assigned to read related articles, problems might arise from the group members related to the content of the articles. Therefore, it is easier for group members to assist each other, as compared to other students outside the group who have been assigned different readings. Thus, the possibility of assisted performance from peers is high especially among the group members. Initiating small groups in closed tasks is potentially effective if we want to have high student participation in online discussion. In a bigger group, there is greater possibility of students choosing not to participate, while in smaller groups, this passivity can be more easily reduced. Additionally, the course would be more manageable and assistance enhanced if it is conducted by more than one tutor.

## **Implications for Policy Makers**

The idea of peer interaction as a valuable ingredient for meeting learning needs should be embedded in course design. Collaborative work should be valued and credited through evaluating student-student interactions. The distinction of open and closed tasks reflects the necessity in course design whether or not a clear agreed upon product requires collaborative input. We suggest that educators at the tertiary level continue efforts to use communication tools as a platform to extend room for discussion among students. A programme that is coordinated in the adjunct online mode needs tools that allow exchanges of assisted performance. For example, the phrase 'Discussion Board' is a sign that most people understand to mean a medium where the students can post their messages to discuss course content with each other. Perhaps the notion of assisted performance can also become a de facto phrase used when discussing online learning environments.

Policy makers should be aware of the different aspects of assisted performance for open and closed tasks. In an open task where the postings are varied, the criteria of assisted performance from peers can be used to assess the

students' contribution. It should be considered as one of the criteria in online course assessment. The postings that contain assisted performance could be considered as a meaningful contribution while in the context of closed tasks, the postings are more specific and expected. Therefore, the kind of assessment for such tasks is more dependent on the task's goal, processes and outcomes.

## Limitations as a Strength

The central limitation of this study stems from the data collected. Data availability led to a reliance on the interpretation of the posted messages in Discussion Boards in a single Masters programme. Inevitably, this restricts the interpretation and limits wider perspectives.

This study was supported by data produced by a specific group of people. Therefore, making generalisations was not the main intention, but rather offering an alternative perspective for looking at 'teaching' in a particular way. This perspective will hopefully widen our understanding of one kind of online community. This limitation does lead to some theoretical constraints. The search for theories that are applicable to the idea of teaching and learning behavior and communication within a narrow form representation (which are the 'texts') was a struggle. It is through conceptualisation of 'teaching' as assisted performance found in students' postings where the occurrence of learning is possible in such environments.

There is clear evidence that even in this context where the task design is somewhat experimental – all were new to the medium – and there is no clear development of a peer to peer culture, that the content of student posts is such that these posts offer assistance to the performance of readers, and therefore have the potential to support peer learning. However, participation in this network of learning is not universal and continues to depend on the tutor as a key actor. If the ideal model of a strong peer network involving all students more or less equally in building ties to support learning is to be achieved, a clear management strategy will be required.

The authors believe that assisted performance fills an important gap with regard to the conceptualisation of 'teaching' in the online discussion context. Informed by a redefinition of teaching from the sociocultural perspective and the need for such redefinition and practice in the context of online learning, this study proposes that 'teaching can be usefully redefined as assisted performance' in the online discussion mode.

This reconceptualisation was confirmed through the findings of this study; 'teaching' was evidenced in students' role through investigation of assisted performance. Therefore, it is possible that in online environments, the role of teaching can be widened to the students. Such a role of assisting others in learning is beneficial for creating meaningful discussion and interactions between students. In this respect, the findings confirm to some extent that 'assisted performance' is a useful conceptualisation of teaching (Tharp and Gallimore, 1988) that distinguishes meaningful interactions taking place in students' interaction within online discussion.

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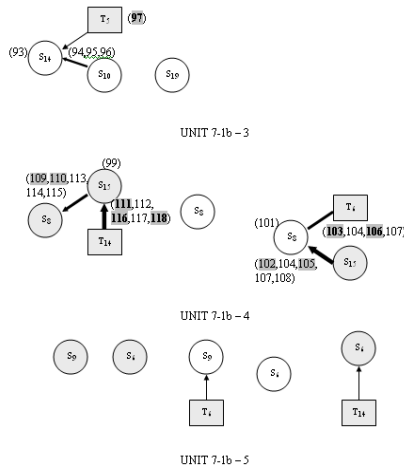
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## Appendix



### Example of Interaction Mapping