Examining teacher education through cultural-historical activity theory

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Abstract
Cultural-historical activity theory (CHAT) is an approach that can be used to analyse human interactions and relationships within particular social contexts. CHAT provides researchers with both a methodological framework, and the practical tools with which to apply it. It is being increasingly used to examine issues in teacher education, as well as in other fields, both in the UK and internationally. The CHAT approach enables researchers to consider the tensions, contradictions and different motives which may be brought to bear within a given context. It offers opportunities for reflection on our own assumptions, and those of others, and can stimulate new professional learning.

This article provides a brief outline of the CHAT methodology and provides some examples of how it has been used as an analytical tool in different research studies of aspects of teacher education.

Key words
Cultural-historical activity theory; methodology; qualitative analysis; teacher education.

Introduction
Cultural-historical activity theory (CHAT) is one of a family of related theoretical perspectives arising initially from the work of Vygotsky (1978, 1986).These perspectives provide a framework for considering social and cultural practices: both how individuals learn by engaging in these practices and how mediational 'tools' such as language shape human activity. CHAT is slightly different from other forms of cultural-historical theory in that it focuses on *collective* social practices (such as work-places) and considers the complexity of real-life activity. It also emphasises 'action or intervention in order to develop practice and the sites of practice' (Edwards and Daniels, 2004:108).

In so doing, CHAT can provide researchers in teacher education with a methodological framework for analysing educational activity in practice, and for better understanding the different motives (often unacknowledged) that are brought to an activity by various participants. In exposing the contradictions that may occur within an activity 'system' CHAT researchers aim to enable participants to better understand the processes by which their own community operates, and to identify any necessary actions required to bring about improvements to practice.

CHAT is distinct from other qualitative methodologies in terms of the analytical approach that is employed in considering a particular situation. Data can be collected in a variety of ways: for example through observation, interviews, and the examination of documentary materials, but these are all considered within the context of the CHAT framework. It could be argued that researching an activity system, such as a classroom, is similar to adopting a case study approach. However, case study approaches do not necessarily require a particular methodological approach to the analysis of data. Similarly, while CHAT research is aimed at bringing about changes to practice, it is not the same as action research. The process of CHAT analysis can clarify an issue for the members of a particular community, and this may in turn lead to the adoption of an action research approach to bring about change, but this is not the automatic outcome of applying the CHAT methodology.

Cultural-historical activity theory (CHAT) is being increasingly used to examine issues in teacher education, as well as in other fields, both in the UK and internationally (Ellis et.al., 2010, Tsui & Law, 2007, Oswald & Engelbrecht, 2013). This article briefly outlines the development of cultural-historical theory, and the work of Engeström, one of the key figures in the development of CHAT methodology. It discusses how the methodology can be applied in practice, drawing on examples of how CHAT has been used as an analytical tool in different research studies of aspects of teacher education.

The development of CHAT
As a theory, CHAT has its roots in the socio-cultural perspectives of Vygotsky (1978, 1986) and has subsequently been developed by Leont'ev (1981), and particularly by Engeström in Finland (Engeström et.al., 1999, Engeström, 2001, 2007). Vygotsky's interest focused on the development of human consciousness through mediation by the use of psychological tools such as language, but also social influences. The theory of social constructivism suggests that we are not isolated individuals interacting with our environment on a purely biological basis, but rather that our relationship with the world is mediated by other people, and the cultural-historical context in which we live. This context includes language and a range of other symbols and artefacts. Since human activity also modifies the environment in which we live, we are therefore subject to the continuous effects of this modification – we change culture and society through mediation, and in turn this changes us.

This socio-cultural theory was extended by Leont'ev (1981) to apply to groups of people rather than to individuals, and the idea of an activity 'system' was developed. An activity is embedded within a surrounding system; for example specific learning and teaching strategies are embedded into the activity system of classroom learning, which is in turn embedded into the activity system of the school. Within these embedded systems, the cultural life of the school (or other setting) is developed and maintained. Leont'ev argues that collective activity systems have a particular motive or *object*, which participants achieve through various forms of mediation, even if individual participants are not always fully aware of the goal or object which the activity system aims to achieve. The identification of the *object* of an activity system is an important concept within CHAT research. However, activity systems are not static entities. Indeed the benefit of the CHAT approach is that it enables the researcher to study the '*process* or activity of engaging with a task rather than merely the outcome or product' (Ellis et al., 2010:95, author's italics).

Engeström has developed the concept of the activity system further to explore the complex relationships between people, mediating artefacts and behaviours (Engeström et al., 1999) and more recently he has examined the opportunities for learning created where two different activity systems meet and overlap (Engeström, 2001). Research into teacher education has drawn primarily on the work of Engeström as an analytical tool, and some examples will be discussed later in this article.

Engeström's 'generations' of Activity Theory
Engeström (2001) discusses three 'generations' of the development of CHAT. The first is that of Vygotsky, in which concept of cultural mediation was introduced. The second generation, developed by Engeström, presents the complex interactions of an activity system. The various components of an activity system are identified by specific terms, which are applied in research analyses based on CHAT (see Fig 1.). These will now be briefly discussed, within the context of a specific example.
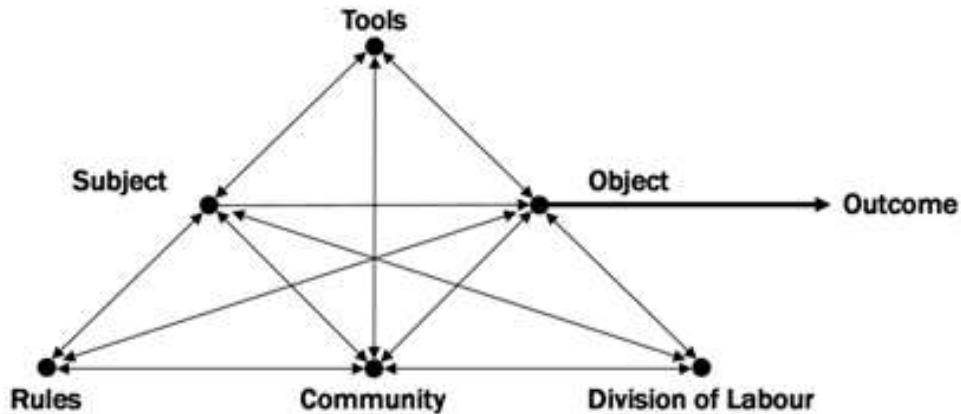

Figure 1. The components of an Activity System.

The *subject* of an activity system is the person, or group of people whose perspective is the focus of the analysis e.g. a teacher or a group of pupils.

The *object* is the goal or motive of the activity system as a whole (not necessarily that of individual members), e.g. improving pupil outcomes.

Both *subject* and *object* are influenced by mediating *tools* or artefacts, the nature of the *community* to which the activity system belongs, the *rules* of normal behaviour appropriate to the system and the *division of labour* within the system. The term *division of labour* relates to Marxist analysis of social relations and can refer both to hierarchical power structures within the system, and also to the way in which labour is divided within the context of the system:

> In other words, rules and the division of labor define how participants are expected to behave and who is expected to do what in the achievement of the object of an activity system (Tsui & Law, 2007: 1291).

So for example, a class teacher (*subject*) wishing to improve pupils' achievement (*object*) within a particular school (*community*) might want to introduce a new strategy for learning (*tool*). Depending on the management structure within the school (*division of labour*), the teacher may be constrained on the basis that the new idea is seen as deviating from implicit norms (*rules*), or encouraged if the attitude within the school is to support innovation - also an implicit *rule*.

Activity systems do not remain static, and the elements within a system may change places over time. Thus in the example above, if the new strategy for learning is shown to be successful, it may be adopted by other teachers and its implementation may become a *rule* for within the school.

The interplay between the elements of an activity system or between different systems can provide opportunities for new learning, and for change. Engeström argues that the constant change and movement within systems acts as a vehicle to bring about 'expansive learning' (Engeström, 1999). The analysis of 'contradictions' within activity systems, and in adjoining clusters of activity systems is seen as a potential source of learning (Avis, 2009). Contradictory perspectives can arise in relation to the *object of* an activity system, resulting in different interpretations of the other components of the system (such as the tools or artefacts, rules etc.):

> One of the insights that a CHAT perspective affords is the analysis of multiple motives working on the same object and distinguishing a diversity of motives among those (collectively) in the subject position (Ellis et al., 2011:18).

As contradictions and changes within the activity system become increasingly disruptive and challenging for participants, they reflect critically on the situation and begin to look for new solutions. Current assumptions and norms can be challenged and changed through this transformational process. However, this is not an inevitable process, and contradictions within activity systems may persist because they are not fully recognised. Using the CHAT framework for analysis enables researchers to identify these contradictions and to suggest possibilities for expansive learning as a result. The research conducted by Edwards and Protheroe (2004) and Ellis et al. (2011), provides examples of this analysis.

The CHAT approach applied to mentoring in schools
One example of this is the work of Edwards and Protheroe (2004) in an examination of mentoring in primary schools**.** As part of a larger study Primary PGCE students from two higher education institutions were observed teaching literacy and numeracy on their first and final placements and then interviewed following the lessons. Their mentors were also interviewed to ascertain their focus in feedback conversations. Their conversations with the student teachers were also tape recorded. Content analysis was applied to both interviews and tape recorded feedback sessions with student teachers. The researchers found that mentors appeared to be concerned less with the learning of the student teachers than with ensuring the pupils 'covered' the required curriculum content, and asked themselves 'how the well-meaning and hard-working mentors in the study found themselves mentoring in this way.' (Edwards & Protheroe, 2004: 191).

Applying the framework as an analytical tool, Edwards & Protheroe show how the individual acts of mentors are linked to the specific contexts in which they occur and the more general activity of the school :

> The method of analysis provided by Engeström's framework allows us to see how individual acts are located within wider sets of relationships, histories and expectations. The mentors were themselves located in schools as activity systems with urgent goals in a national system of highly public accountability (Ibid: 194).

The example provided shows how one mentor (the *subject* of the analysis) praises the student teacher (initially seen as the *object* of the analysis) for keeping to the lesson plan (the *artefact*). However, Edwards and Protheroe argue that the mentor may have two objects in mind at the same time: passing on her own perception of good practice to the student teacher, to enhance professional development, and/or ensuring continued curriculum coverage by emphasising the importance of sticking to the plan.

The question as to which of these two possible intentions is the stronger may be answered by considering the community within which this action takes place: is it that of the school or the training partnership?

> If the community is the school or classroom with their goals of curriculum coverage and pupil performance then the object is not the student teacher, but is either, or probably both, the pupils and the curriculum task. If the community is the training partnership, then the object is the student teacher and her learning outcomes. It would seem from our evidence that the communities we examined were valuing operating as classrooms in schools more than as part of training partnerships (Ibid: 193).

If the main focus of mentoring activity is related to the community of the school, then the *object* of the mentoring activity would appear to be that of pupil progress or curriculum coverage, rather than the professional development of the student teacher. Edwards & Protheroe continue to show how the *division of labour* between the mentor and the student teacher positions the student teacher as a 'proxy teacher' (Ibid: 194) rather than as a professional learner. The *rules* of the organisation of the training partnership also seemed to reinforce this positioning.

In this example, CHAT is used to reveal the contradictions inherent in the partnership model of initial teacher education and to raise questions as to how mentors might be enabled to focus more on the student teacher as a professional learner within the activity system of the school, rather than as a curriculum deliverer.

In another study, Douglas (2010) considered the different mentoring approaches used in two subject departments within the same secondary school. Using the same CHAT framework as Edwards and Protheroe above, Douglas shows the effect of mentors' conceptions of the *object* of mentoring activity on the student teachers involved, and how this was displayed in the conceptual *tools* utilised by the mentors. This analysis provided further insight into limitations in some aspects of the student teachers' professional learning.

The CHAT approach applied to Teacher education within a University context
CHAT was also used as part of a research study focusing on the work of university teacher educators (Ellis et al., 2011). The analysis within one part of the study focused mainly on the use of *artefacts* or *tools* in the observed work of the participating teacher educators (both in university sessions and visiting student teachers in schools). In this context, *tools* were taken to be material objects used as resources by the teacher educators: lesson observation forms, computer software, puppets, mathematical classroom aids. The researchers also considered the *rules* or norms that might apply within the particular activity context, of the school or university classroom.

The researchers were interested in how the teacher educators conceptualized the *objects* of their activities, and how they and their students used the *artefacts* or *tools* in learning situations. They considered the negotiation of meaning between tutors and students, and the social context in which these negotiations took place. One example provided concerned the use of computer software designed to randomly generate students' names. This was used in a session concerning approaches to assessment for learning. The teacher educator's object was to introduce the 'no hands up' approach to managing classroom questions and to discuss the merits of this approach. However, the student teachers appeared much more interested in the software as a practical aid in itself – where to obtain it and how it worked. In another example, lesson observation forms acted both as an opportunity for the visiting tutor to stimulate reflection on practice, and as a check list against the Standards for Qualified Teacher Status in England:

> At times, it seemed that such textual artefacts were mediating work on two different objects (student teachers' learning and the quality assurance of partnership processes) so that, in effect, teacher educator and student teachers were participating in two different activity systems simultaneously (Ellis et al., 2011:19).

As with the work of Edwards and Protheroe (2004) discussed above, these different activity systems had different objects and different rules. The teacher educators and student teachers each shaped their interactions in schools and the university according to the nature of the activity system in which they were implicitly participating – but these were not always the same. The teacher educators were usually attempting to use the artefacts to stimulate learning at a deeper (academic) level, as with the session on assessment for learning, but the student teachers often saw these as practical activities in their own right, as 'something you do' - as a *rule-* in the classroom:

> Tool-use reveals something about the cultures within which the tools have developed as well as the thinking of those who work with them and, further, highlights the relationship between these two, social and historical processes (Ellis et al., 2011:18).

In this case, the researchers wondered whether the teacher educators' use of artefacts that were initially developed for use in the school classroom might prevent deeper reflection by student teachers, rather than stimulating it, as was the intention of the observed sessions:

> The artefacts presented themselves with a degree of familiarity as the kinds of things used by teachers in schools, and therefore were likely to be perceived more immediately as useful in lessons by the student teachers (Ellis et al., 2011:20).

Further developments of CHAT: boundary crossing and expansive learning
Engeström's 'third generation' of CHAT aimed to develop 'conceptual tools to understand dialogue, multiple perspectives and networks of interacting activity systems' (Engeström, 2001: 135). In this model the focus is placed on the 'boundary' between two activity systems, and on the potential of the 'boundary crossing space' as a site for learning. This analytical framework has been used particularly in investigating and developing multi-agency working (Daniels et al., 2010), but has also been applied to aspects of teacher education. Boyd et al. (2006) investigated the experiences of new teacher educators and identified a number of contradictions experienced by former teachers following their appointment as university teacher educators, seeking to make sense of their new role.
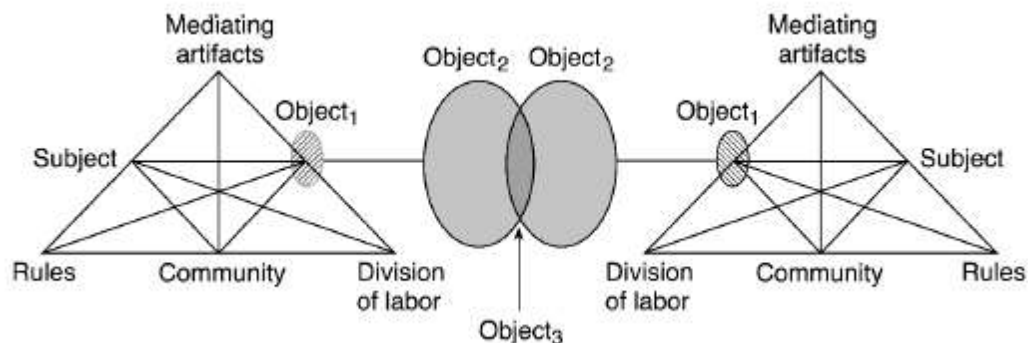

Figure 2. Third Generation Model of Activity Theory (Engeström, 2001:136).

Applying Engeström's 'third generation' Activity Theory (Engeström, 2001), they considered the teacher education partnership with schools as 'two separate but inter- related activity systems' (Boyd et al., 2006:3), neither of which have the professional learning of the new teacher educator as their main *object.* The new teacher educators in the study found themselves in a boundary crossing context, having neither made a full break with their previous identities as school teachers, nor entered fully into the expectations of the role of a university lecturer. The outcomes of this research suggested that more attention needed to be given to the induction of new teacher educators to enable them to examine the tensions inherent in their changing role and use these as a source of learning and professional development. As a result, a series of recommendations was disseminated within the teacher education community to support this process (Boyd et al., 2007).

A different application of the concept of boundary crossing can be seen in the research of Tsui and Law (2007), investigating the relationships between mentors, students teachers and university supervisors in teacher education in Hong Kong. Tsui and Law (2007) present the mentoring of student teachers by mentors in schools as one activity system, and the supervision of the same students by university supervisors as a second activity system. As with Edwards and Protheroe (2004), they found that mentors did not always have the learning of the student teacher as the main *object* of their activity, but had this as a secondary focus after the learning of the pupils in the class. In contrast, the university supervisors had placed the student teacher's ability to link theory and practice as the main object, and were less concerned with the progress of the pupils. The classroom became a 'boundary zone' where student teachers tried to respond to advice and expectations from both mentors and university supervisors:

> The multiple perspectives and multi-voicedness inherent in the interaction generate contradictions. S(tudent) T(eacher)s need to operate in two different systems with two different, though related, objects (Tsui & Law 2007: 1293).

The research presents a case study of the use of 'lesson study' as an attempt to overcome these contradictions, involving two student teachers, their mentors and their university supervisors. Within the CHAT framework, the practice of 'lesson study' was the mediating *tool* or *artifact*. Although it took time for all participants (*subjects*) to adjust to the new relationships within the re-configured activity system, the eventual outcomes were deemed to be positive:

> The considerably higher percentages of self-evaluation showed that the S(tudent) T(eacher)s were better able to examine their own practices in terms of how they could best help their students learn rather than how they could live up to the expectations of the U(niversity) T(eacher)s and M(entor) T(eacher)s. (Ibid.: 1299).

CHAT methodology as a mechanism for professional change
CHAT is both a method of analysing qualitative data collected using a range of approaches, and a methodological approach used to help practitioners gain understanding of their own, and others' work contexts, in order to bring about change. Although we are shaped by the socio-cultural context in which we live, we are not necessarily determined by it. Thus if we are aware of the ways in which knowledge is socially constructed within our particular context, we can develop our understanding of the activity concerned through the examination and analysis of interactions and relationships within a particular activity system. This in turn can lead to decisions about where and in what ways change might be necessary.

Developmental Work Research (DWR), pioneered by Engeström (2007), aims to support practice development through engaging participants directly in CHAT analysis of their own activity system. It is claimed that through this process they are helped to understand the various cultural and historical dimensions of their existing practices and discourse in a way that would not necessarily happen through the use of approaches such as action research. The operation of a DWR workshop requires facilitation by a 'researcher-interventionist' and a series of workshops is required in order to bring about the 'cycle of expansive learning' which enables participants to interrogate their current practice and to model ideas for possible change.

This can support the improvement of practice within a single activity system, and also support practitioners in different activity systems (such as multi-agency working) to consider different perspectives on a given context, using this as a tool (Daniels et al., 2010). In some of the research studies discussed above, DWR was either used as part of the methodological process, or suggested as a means to resolve the contradictions identified through CHAT analysis.

For example, Edwards and Protheroe (2004: 195), suggest that using a form of DWR might enable colleagues in school to reflect on the structures that support or inhibit professional learning. As a further part of the research process under- taken by Ellis et al. (2011), the CHAT analysis was presented to some of the teacher educator participants at a further workshop, using a DWR methodology. This process enabled the researchers to join with these participants in developing the analysis further to identify key themes in the work of teacher educators, and to raise important issues concerning the future of teacher education (Ellis et al., 2013, Nichol & Blake, 2013).

Conclusion – the limitations and possibilities of CHAT

As with any theoretical framework, there are limitations to the ways in which CHAT can be applied. Activity theory focuses on specific and localized social practice, and not on 'society' as a whole. Thus although we can see that activity systems can be embedded within each other to a certain extent, it is not possible to extend this notion of embedding ad infinitum. Both schools and universities are also part of socio-political systems which are beyond the analytical scope of activity theory. Hartley (2009:146) points out that issues of class, race and gender tend to be subordinated within activity theory analysis, and relatively little attention is paid to individual human agency (Nichol & Blake. 2013: 287).

Nevertheless, CHAT has much to offer teacher education, both as a method of analysis and as a stimulus for change. The examples of CHAT research outlined in this article are an indication of the range of ways in which the method is being applied. It enables us to analyse educational activity in practice, to identify:

> who (subject) does what to whom/what (object), in what circumstances (rules, community, division of labour, where, when) (Boag-Munroe, 2010: 121)

and to see social situations in a new light.

The CHAT methodology initially appears complex, precisely because it examines complex social systems. This article has outlined a number of examples of how the application of the methodology has enabled researchers to understand these complex systems more clearly. In this process, the different perspectives of those within an activity system emerge more explicitly, and tensions and contradictions become more evident. The insight provided by CHAT analysis offers opportunities for reflection on our own assumptions, and those of others, and thus stimulates new professional learning. Such new learning might also lead to a critical evaluation of current working and teaching practices, leading to recommendations for improvements or change.

References

Avis, J. 2009. Transformation or Transformism: Engeström's Version of Activity Theory? Educational Review 61 (2) 151–165.

Boag-Munroe, G. (2010) Investigating teacher language a comparison of the relative strengths of Conversation Analysis and Critical Discourse Analysis as methods in: V. Ellis, A. Edwards and P. Smagorinsky, (Eds) Cultural Historical Perspectives on Teacher Education and Development: Learning Teaching (London, Routledge).

Boyd, P., Baker, L., Harris, K., Kynch, C. & McVittie, E. (2006) Working with Multiple Identities: supporting new teacher education tutors in Higher Education. Available online at: http://escalate.ac.uk/2324 (Accessed 1st December 2013).

Boyd, P. Harris, K and Murray, J. (2007) Becoming a Teacher Educator: Guidelines for the induction of newly appointed lecturers in Initial Teacher Education. Available online at: http://escalate.ac.uk/3662 (Accessed 1st December 2013).

Daniels, H., Edwards, A., Engeström, Y., Gallagher, T. and Ludvigsen, S.R., (Eds) (2010) Activity Theory in Practice promoting learning across boundaries and agencies (London: Routledge).

Douglas, A. (2010) Different social situations of development in: V. Ellis, A. Edwards and P. Smagorinsky, (Eds) Cultural Historical Perspectives on Teacher Education and Development: Learning Teaching (London, Routledge).

Edwards, A. and Protheroe, L. (2004) Teaching by proxy: understanding how mentors are positioned in partnerships, Oxford Review of Education, 30 (2), 183 -197.

Ellis, V., Edwards, A. and Smagorinsky, P. (Eds) (2010). Cultural Historical Perspectives on Teacher Education and Development: Learning Teaching (London, Routledge).

Ellis, V., McNicholl, J., Blake, A. and McNally, J. (2011). The Work of Teacher Education: Final Research Report for the Higher Education Academy (Bristol: ESCalate Subject Centre for Education).

Ellis V., Glackin M., Heighes D., Norman M., Nicol, S., Norris, K., Spencer, I and McNicholl, J. (2013) A difficult realisation: the proletarianisation of higher education-based teacher educators, Journal of Education for Teaching: International research and pedagogy, 39 (3) 266-280.

Engeström, Y. (1999) Activity theory and individual and social transformation in: Y. Engeström, R. Miettinen, and R-L.Punama'ki (Eds) Perspectives on Activity Theory, (Cambridge, Cambridge University Press).

Engeström, Y. (2001). Expansive learning at work. Journal of Education and Work, 14(1), 133–156.

Engeström, Y. (2007) Putting Activity Theory to Work: The Change Laboratory as an Application of Double Stimulation in: B. Daniels, M. Cole, and J. V. Wertsch (Eds) The Cambridge Companion to Vygotsky (Cambridge: Cambridge University Press).

Hartley, D. 2009. Education Policy, Distributed Leadership and Socio-Cultural Theory. Educational Review 61 (2): 139–150.

Leont'ev, A. N. (1981). The problem of activity in psychology in: J. Wertsch (Ed.), The concept of activity in Soviet psychology. (Armonk, N.Y.Sharpe).

Nichol, J. and Blake, A (2013) Transforming teacher education, an activity theory analysis, Journal of Education for Teaching: International research and pedagogy, 39 (3) 281-300.

Oswald, M. and Engelbrecht, P. (2013) Leadership in Disadvantaged Primary Schools: Two Narratives of Contrasting Schools. Educational Management Administration & Leadership 41(5) 620-639.

Tsui, A. & Law, D. (2007).Learning as Boundary Crossing in School University Partnership, Teaching and Teacher Education, 23(8), 1289-1301.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. (Cambridge, MA: Harvard University Press).

Vygotsky, L.S. (1986) Thought and Language. (Cambridge, MA: MIT Press).