Activity Theory in Education: Research and Practice brings together cutting-edge scholars from a number of continents. Through in-depth case studies the authors highlight how Activity Theory is used in education and discuss the theoretical as well as pragmatic use of Activity Theory frameworks in a range of contemporary learning contexts. The first section of the book focuses on empirical research on using Activity Theory in analysing students' and teachers' experiences of learning and teaching in face-to-face and online learning contexts. The second section contains insights in identifying historical and systemic tensions in educational contexts using Activity Theory. The third section discusses conceptual and contextual aspects of educational contexts through Activity Theory, and Section four discusses the application of Activity Theory in understanding teachers' Pedagogical Content Knowledge and curriculum development.

"In spite of the widespread and rapidly increasing use of Activity Theory in educational research, few collections of this work are available. Activity Theory in Education: Research and Practice is such a much needed collection of practical experiences, theoretical insights and empirical research findings on the use of Activity Theory in educational settings." – Yrjö Engeström, Centre for Research on Activity, Development and Learning (CRADLE), The University of Helsinki
Activity Theory in Education
Activity Theory in Education

Research and Practice

Foreword by Yrjö Engeström

Edited by
Dilani S. P. Gedera and P. John Williams

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Cultural-Historical Activity Theory is applied around the world in various disciplines and domains of practice. However, its historical roots since the pioneering work of Vygotsky and Leont’ev are closely intertwined with transformations in education. In spite of the widespread and rapidly increasing use of Activity Theory in educational research, few collections of this work are available. *Activity Theory in Education: Research and Practice* is such a much needed collection of practical experiences, theoretical insights and empirical research findings on the use of Activity Theory in educational settings.

Activity Theory is probably most commonly used in educational investigations as a conceptual lens through which data are interpreted. The well known triangular model of an activity system (Engeström, 2015, p. 63) is frequently applied as a graphic model and lens for such interpretive data analyses. The chapters of the first part of the present volume are to a large extent examples of this type of study. In such analyses, the model of an activity system makes visible the context of the educational processes under investigation. Context is represented as a systemic formation within which specific components and their relations can be identified and examined in detail. Extending the unit of analysis beyond a single activity system to encompass multiple interconnected activities — i.e., third generation Activity Theory — will become an important challenge as educational processes become increasingly distributed and networked.

Qualitative change and development in activity systems, including schools and other educational organisations, is driven by contradictions. The chapters of the second part of the present volume focus on contradictions and tensions in educational contexts. Contradictions are historically accumulating systemic tensions that cannot be observed directly. Only their manifestations, such as disturbances and conflicts, are observable in the daily flow of actions. That is why the examination of contradictions requires historical analysis. Hypotheses generated by historical analysis can then be tested and enriched with data on disturbances and conflicts experienced and articulated by practitioners.

Applying Activity Theory in concrete research typically requires intermediate theoretical concepts. Such intermediate concepts connect general theoretical concepts such as activity system and contradiction to the specific context and data.
Y. ENGESTROM

under investigation. Chapters in the third and fourth parts of the present volume employ several intermediate theoretical concepts. These include emotion, cognition and action as an interconnected triad, organisational culture, community education and sustainability, and pedagogical content knowledge. These chapters contain fruitful questions and challenges. For example, what is the relationship between psychological tools and organisational culture? Or, How to integrate emotions in the study of human activity?

In its developed form, research based on Activity Theory develops and applies a methodology of its own. Here methodology is understood as the bridge between theory and data. In other words, methodology is more than a collection of specific methods or techniques. It puts forward and implements a theory-driven set of principles, or “an argumentative grammar” (Kelly, 2004), upon which the choice of specific methods is based, starting from data collection and reaching all the way to conceptual interpretation of the findings. The present volume contains interesting examples of methodologically informed choices of methods. For instance, think aloud and stimulated recall as methods of data elicitation were clearly chosen because they corresponded to both the specific context of the study and to the concerns generated by the basic Activity-Theoretical ideas guiding the study.

We may think of an ideal-typical design of an Activity-Theoretical study with the help of Figure 1.

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*Figure 1. Ideal-typical design of an Activity-Theoretical study*
The lightning-shaped arrows in the analysis box in Figure 1 indicate that the meeting between intermediate theoretical concepts and focal data is a creative field of surprises. It is a tension-laden encounter in which the intended concepts will be questioned, modified and occasionally discarded.

The text on the right-hand side of Figure 1 indicates that Activity-Theoretical studies lead to interventions aimed at enhancing expansive learning and transformative agency (Engeström, Sannino, & Virkkunen, 2014; Sannino, Engeström, & Lemos, 2016). Several chapters in the present volume anticipate and provide building blocks of this kind of formative intervention. Examples of such openings include community education for sustainability and teachers designing their classroom curriculum. Perhaps these openings may be read as markers of an emerging zone of proximal development for making use of Activity Theory in educational research.

REFERENCES


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Cultural Historical Activity Theory (Activity Theory), as a multi-disciplinary research framework has gained increasing popularity in recent years. Activity Theory is rooted in the works of Vygotsky, Leont’ev and Engeström and offers analytical as well as conceptual tools to examine human practices. Activity Theory in Education: Research and practice focuses on a variety of perspectives on the application of Activity Theory in Educational contexts. It provides methodological guidance/theoretical aspects and also moves beyond the theoretical realm and offers perspectives on the pragmatic use of Activity Theory framework in contemporary learning contexts.

The book stems from our insights and knowledge accumulated through the experience of a number of substantial research projects which were carried out between 2011 to 2014. The quest for a better understanding of Activity Theory involved discussions, scholarly debates, and many hours of reading which inspired us to initiate this book.

We are very grateful to the authors, who each contributed a chapter to this book. We are particularly pleased that Professor Engeström agreed to write the Foreword to the book after reading the drafts of all the chapters. We would also like to thank several people who have been supportive in one way or another in the course of this journey; Jenny Mangan, Arezou Zalipour and Noeline Wright. It is our hope that the various experiences recounted in this book will develop deeper understandings of Activity Theory to enable more effective use of such frameworks in educational research.
1. THE VYGOTSKY PROJECT IN EDUCATION – THE THEORETICAL FOUNDATIONS FOR ANALYSING THE RELATIONS BETWEEN THE PERSONAL, INSTITUTIONAL AND SOCIETAL CONDITIONS FOR STUDYING DEVELOPMENT

INTRODUCTION

In 1984 Yrjö Engeström, Pentti Hakkarainen and Mariane Hedgaard wrote that:

For the self-conscious development of any science – including didactics [education] – it is essential to work out the basic inner relationship of its object system. This bare generality, the initial ‘germ cell’, is the original contradiction that has given birth to the concrete system under investigation. The mental reproduction of this germ cell is the first step in the process of understanding and shaping practically the rich forms of the totality, of the ‘unity of the manifold’, in their lawful inner determination and development, i.e. of ascending from the abstract to the concrete. (p. 127)

Key for Engeström, Hakkarainen and Hedgaard is the germ cell or unit as the basic inner relationship of the object system. Vygotsky (1987) and those that have followed have sought to identify what makes up the smallest unit or germ cell of a system. What is the essence or basic unit that shows all the relations of that system? What might be the contradiction or tension that acts as the catalyst for the development of that system? These were central questions in 1984 for Engeström, Hakkarainen and Hedgaard, as they were for Vygotsky, and as will be shown in this chapter, are still relevant questions today.

A “self-conscious development” of educational research that draws upon a non-classical methodology to progress understandings (see Robbins & Stetsenko, 2002) is still much needed. Mainstream research methodologies have not yet institutionalised a cultural-historical approach as a key methodological paradigm for engaging in research. Yet, a growing body of empirical research is being undertaken which seeks to examine the contradictions that exist within a concrete system of education for specific fields of inquiry. As such, an interesting tension exists between the research needs of educators, empirical studies being formulated, and what is promoted in the mainstream methodological literature.

Marilyn Fleer
Consequently, there now exists a general mix of concepts and theories that draw their inspiration from Vygotsky, but where the integrity of the original theory may have been lost. To test this out, an analysis of a sample of 11 chapters that draw upon a mix of theoretical concepts, but which fit loosely under the Vygotskian suite of studies, will be examined. The concept of a germ cell or unit will be applied to these studies in order to determine if and what might be the unique features that characterise the whole Vygotsky project. In this chapter the term Cultural-Historical Theory is used to name the original theory set out by Vygotsky. The Vygotsky project names the collection of theories that have since emerged (Stetsenko & Arievitch, 2010). Insights from this investigation will be used in this chapter to inform a theoretical discussion on the Vygotsky project for the context of education, giving new theoretical understandings and methodological integrity to what constitutes the essence of the Vygotsky project. Therefore, the focus of this chapter is a theoretical discussion on the methodological tensions inherent in existing empirical research that draws upon Activity Theory, Sociocultural Theory, Cultural Historical Activity Theory (CHAT), and Cultural-Historical Theory for the context of education. The outcomes contribute back into mainstream theory on the place and integrity of cultural-historical research as a key methodology for understanding development.

This chapter begins by drawing out the central methodological dimensions originally proposed by Vygotsky, where the historical and dynamic processes of development are unearthed. Key concepts from Vygotsky’s (1997) methodology and those who have followed, are used to determine the unit or essence of the relations found within each empirical study analysed. It will be argued that the societal, institutional and personal motives and demands that are constantly interacting in these educational settings still require further interrogation, if we are to fully understand the relations between the learning of the participants and development of the system as a whole, with methodological integrity. In order to undertake this methodological analysis and theoretical discussion, this chapter begins by foregrounding the key concepts of the Vygotsky project.

THE VYGOTSKY PROJECT

Stetsenko and Arievitch (2010) refer to the Vygotsky project to capture the original foundations from which many new directions have been formulated. As is well known, Vygotsky’s seminal ideas were launched in the 1920–30s with a range of scholars, including Leontiev and Luria. After Vygotsky’s untimely death in 1934, the Vygotsky school, as it became known, continued to develop its methodological approach against a backdrop of classical reductionist research methods driven by behaviourism. According to Stetsenko and Arievitch (2010), the hotspot of intellectual activity included D. Elkonin, P. Galperi, A. Zaporozhets, L. Bozhovich, L. Lisina, P. Zinchenko, and V. Davydov who together shaped Russian research from that period. Cultural-Historical Theory later influenced Western thinking through the translation of Vygotsky’s original texts and the above mentioned authors’
papers (and others) that were published in the Journal of Russia and East European Psychology – thus making their ideas accessible to English readers.

Kozulin (1990) names the original three thinkers as the now famous “troika” (A. Luria, A. N. Leontiev & L. S. Vygotsky) and later the “magnificent eight” (including Lidia Bozhovich, Roza Levin, Natalya Morozova, Liya Slavina & Alexander Zaporozhets). Together, these constitute the original Vygotsky project.

The Vygotsky project has grown in the West, with foundational concepts being researched and elaborated by scholars such as Hedgaard, Rogoff, Elhammoumi, Karpov, Moll, Wells, Robbins, Stetensko, and many more. It is suggested by Stetsenko and Arievitch (2010) that the works of these scholars have supported the progression of concepts and expansion of models as noted in the important publications of Bruner, Scribner, Wertsch, Cole, John-Steiner and Engeström. The latter work being particularly pronounced in this publication, where some have linked the concepts central to Activity Theory to Engeström (e.g. Lockley, 2016; Li, 2016) but also back to Leontiev (e.g. Li, 2016; Mwalongo, 2016).

The Vygotsky project as first named by Stetsenko and Arievitch (2010), can also capture the collective nature of developing methodological concepts in cultural-historical research. The collective nature of formulating and developing theoretical concepts has been noted by both Wertsch (1995) and Kozulin (1998), and can be best understood through the common expression of: – we stand upon the shoulders of the past intellectual giants, who have together generated the methodological tools now available to us in education. Wertsch (1995) has shown through examining the concept of copyright and patents in the context of inventions, how Western individualism has invited us to conceptualise new ideas and tools as being the property of an individual or group of individuals (as we might see when the Nobel prize is awarded to a group of scientists) not something that has emerged historically and collectively. It can be argued that this collective conception of concept development can also apply to the development of a cultural-historical methodology.

The concept of the Vygotsky project in this chapter is used to signal the contributions made across time in Cultural-Historical Theory and Activity Theory, and as is shown below, as a collective rather than individual activity. It is proposed that the Vygotsky project best illustrates how researchers in education invariably draw upon a range of concepts and tools from across Cultural-Historical Theory, Activity Theory, CHAT and Sociocultural Theory, where a vast array of methodological similarities and differences are evident. To test out this new theoretical claim a sample of 11 chapters were analysed that all drew upon a common theoretical approach to guide their empirical study.

SAMPLE

To achieve the theoretical goal of this chapter, an analysis of chapters drawn from three specific contexts was undertaken: 1) learning and teaching in online learning environments, 2) historical and systemic tensions in educational contexts, and
3) the relations between learning and development of individuals and collectives. In Table 1.1 below is a summary of the sources used and the theoretical positions that are named in each chapter.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Source</th>
<th>Theoretical position named</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mwalongo, 2016</td>
<td>Leontiev, Engeström, Vygotsky</td>
<td>Activity Theory</td>
</tr>
<tr>
<td>Otrel-Cass, Andreasen and Bang, 2016</td>
<td>Leontiev, Vygotsky, Bakhtin, Engeström</td>
<td>Activity Theory, CHAT</td>
</tr>
<tr>
<td>Gedera, 2016</td>
<td>Leontiev, Vygotsky, Engeström</td>
<td>Activity Theory</td>
</tr>
<tr>
<td>Harness and Yamagata-Lynch, 2016</td>
<td>Wertsch, Cole</td>
<td>CHAT</td>
</tr>
<tr>
<td>Li, 2016</td>
<td>Engeström, Leontiev, Vygotsky</td>
<td>CHAT</td>
</tr>
<tr>
<td>Tay and Lim, 2016</td>
<td>Engeström</td>
<td>Sociocultural Historical Activity Theory</td>
</tr>
<tr>
<td>Ramanair, 2016</td>
<td>Wertsch, Lave and Wenger, Leontiev, Engeström, Cole</td>
<td>Activity Theory</td>
</tr>
<tr>
<td>Aguayo, 2016</td>
<td>Engeström</td>
<td>Constructivism, Activity Theory</td>
</tr>
<tr>
<td>Pohio, 2016</td>
<td>Engeström, Vygotsky, Wertsch, Kozulin</td>
<td>Activity Theory</td>
</tr>
<tr>
<td>Eames, 2016</td>
<td>Wenger, Engeström</td>
<td>Activity Theory, Sociocultural Theory</td>
</tr>
<tr>
<td>Lockley, 2016</td>
<td>Engeström</td>
<td>Activity Theory, CHAT</td>
</tr>
</tbody>
</table>

Table 1.1 gives a snapshot of how research that loosely draws from the original cultural-historical tradition plays out in both the naming of the theory guiding the research, but also the key sources drawn upon to frame the studies.
What is immediately evident is whilst the work of Engeström is common to almost all studies being analysed, the researchers have named their framing differently because they go beyond the work of Engeström in building their theoretical case. Activity Theory, CHAT, and Sociocultural Theory are commonly used, sometimes within the same chapter. This reflects a broader issue noted across many journals where a range of theoretical pathways are given by researchers when foregrounding their cultural-historical study designs. The theoretical labels mostly used reflect the theoretical pathways of what now constitutes the Vygotsky project, strengthening the case for the need to name the family of theories commonly used. Table 1.1 shows this need.

Further, the analysis of the 11 chapters where authors sought to draw upon a common conceptual tool (Engeström’s triangles), have also enriched the theoretical presentation given because they draw back to Leontiev and Vygotsky, but also project forward when discussing the works of other scholars such as, Wertsch, Lave and Wenger, and Cole (see Column 2). Once again, the citations that go back to the original source and forward to contemporary works, reflect the diversity that now exists in the Vygotsky project.

The findings of the theoretical analysis as presented in Table 1.1 support the use of the term the Vygotsky project to capture the use of the theoretical mix of names used in the literature (e.g. CHAT, Sociocultural) and the diversity of sources used to build study designs (e.g. Engeström, Vygotsky). Scholars who stay primarily within one tradition, such as when citing Vygotsky as the original source and only using one label to describe their theoretical stance (as opposed to a mix), would sit outside of this analysis as they do not illustrate a mix of sources and theoretical labels. The analysis and theoretical points made here give a different reading to that of Stetsenko and Arievitch (2010). Using the term the Vygotsky project is supportive of the increasing mix of diverse theoretical sources and names used, but it also makes clear a new category of theoretical framing that is increasingly prevalent in the current literature.

METHODOLOGICAL CONCEPTS IN EDUCATIONAL RESEARCH

The Cultural-Historical Theory of Vygotsky and Activity Theory of Leontiev can be viewed as providing a methodological foundation from which to examine the relations between societal, institutional and personal dimensions of human development (Hedegaard, 2012). This perspective allows for the identification of a number of key methodological principles that will be discussed in this section in the context of an analysis of the empirical work presented in the sample of chapters shown in Table 1.1. To achieve this methodological analysis, the key ideas from Vygotsky of holistic research, the concept of development, the unit as the basis for analysis, and the embedded role of the researcher, are each discussed in this section and used for the analysis of the sample of chapters.
Vygotsky (1997) stated that, “Before studying development, we must explain what is developing” (p. 44). Veresov (2014) suggests that there are two dimensions to answering the ‘what is developing’ question. First, what might be the psychological process to be investigated and what is the role of the researcher in this process. Veresov (2014) suggests that paired with the “what question” is a “how question”. The question is how to set up the study so that what is being studied can be revealed. For example, we see in Table 1.2 below an analysis of the 11 chapters in the context of the paired questions of what is developing and how the researchers have set up their research to investigate the development of the system they are investigating.

Vygotsky (1987) suggested that everyday life provided the conditions for development through transition points and accidental moments of tension or crisis. Many studies seek to examine the naturalistic conditions that generate contradictions or crises, as noted in Table 1.2, where what is being developed forms the central research question of the empirical studies. Studies that fall under the name of Vygotsky project must focus on development. In a more detailed analysis of the chapters we can show how the researchers sought to examine the development of the system they were studying. For example, Li (2016) examined assessment practices where natural contractions were evident between tutors’ emotional reactions to contextual factors and students emotional responses to assessment feedback. Development of a system has also been central for Eames (2016) who noted:

The juxtaposition of at least three distinct activity systems, the works the planning of a unit, and the delivery of a unit, each of which exist alongside and in connection with other activity systems, allowed the exploration of how the implicit content and pedagogical knowledge of experts could be shared through the mediation of the CoRe tool.

What each of the sample of studies sought to do, was make visible the contradiction or tension that acts as the catalyst for development of that system. However, what is different from Vygotsky’s original conception is that the development being studied is not the person, but rather the development of the activity system. This is an interesting point of distinction noted across the chapters analysed.

Holistic Conception of Research

What we also notice in Table 1.2 is a holistic conception of research in each of the studies presented, suggesting that the theoretical tools used in the Vygotsky project support this basic methodological principle originally outlined by Vygotsky (1987). Important to progressing scholarship in human development has been examining the relation between person, institution and society holistically, rather than drawing upon Cartesian logic which separated mind and body, and reduced and separated the
### Table 1.2. Methodological framing of research questions

<table>
<thead>
<tr>
<th>Sample</th>
<th>What is developing?</th>
<th>How can we investigate this?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mwalongo, 2016</td>
<td>What are students’ perceptions of the use of critical thinking skills in synchronous discussion forums?</td>
<td>Surveys, interviews</td>
</tr>
<tr>
<td>Otrel-Cass, Andreasen and Bang, 2016</td>
<td>What is the relationship between standardised testing and the formation of self</td>
<td>Ethnographic study: Interviews, Observations, Document analysis</td>
</tr>
<tr>
<td>Gedera, 2016</td>
<td>What were the contradictions that affected students’ engagement in a university blended learning course?</td>
<td>Interviews, observations, questionnaires and document analysis</td>
</tr>
<tr>
<td>Harness and Yamagata-Lynch, 2016</td>
<td>What are the systemic tensions associated with teacher unions within the United States, and what entities have been perpetuating these tensions?</td>
<td>Content analysis of three key newspaper articles published about the teachers’ union</td>
</tr>
<tr>
<td>Li, 2016</td>
<td>What are the relations between the contextual factors and cognitive process of tutors when engaged in assessing undergraduate written work, and what is the role of emotions in this activity system?</td>
<td>Online questionnaire, interview, think-aloud, stimulated recall and focus group</td>
</tr>
<tr>
<td>Tay and Lim, 2016</td>
<td>What are the actions of the school teaching community during one-to-one computing?</td>
<td>Ethnographic study: observations, field notes, document analysis of planning documents, publications and reports</td>
</tr>
<tr>
<td>Ramanair, 2016</td>
<td>How was Moodle used in classroom English language learning and what were the challenges experienced?</td>
<td>Ethnographic study: interviews of teachers and students</td>
</tr>
<tr>
<td>Aguayo, 2016</td>
<td>Can the use of ICT assist with the non-formal education for community understanding and action for sustainability?</td>
<td>Pre, post and follow up surveys after a Web-based intervention</td>
</tr>
<tr>
<td>Pohio, 2016</td>
<td>An investigation of the communication tools used to facilitate home-school community</td>
<td>Case study – interviews</td>
</tr>
<tr>
<td>Eames, 2016</td>
<td>How can experts in content and pedagogy work together with early career secondary teachers to develop one science topic CoRe and one technology topic CoRe to support the development of the latter’s PCK?</td>
<td>3 activity systems: 1) observations/field notes of workshops, 2) reflective journal and discussions on planning, 3) classroom observations</td>
</tr>
<tr>
<td>Lockley, 2016</td>
<td>What are the ways that secondary teachers in NZ develop local curriculum for sustainability?</td>
<td>Teacher interviews, classroom observations, focus groups</td>
</tr>
</tbody>
</table>
M. FLEER

research context from the lived experience of the person(s). Stetsenko and Arievitch (2010) argue that the Vygotsky project:

...offers a dialectical and nonreductionist, yet consistently materialistic (i.e., nondualist), vision of human nature and development as rooted in, derivative of, and instrumental in the material collaborative social practices of people (i.e., human goal-directed, purposeful, collaborative activities) aimed at transforming their world. (pp. 231–232)

The holistic method of Vygotsky (1987) and transformative stance of Stetsenko and Arievitch (2010), focus our attention on the holistic nature of research. That is, we must examine not just an individual, but also the social relations and the material conditions that societies and institutions create, which in turn afford (or not) opportunities for a person’s development or the development of the system. Holistic research allows for not only the analysis of the system, but gives the possibility to examine the genesis of development. In research, Vygotsky sought to create the research conditions that allowed for the genesis of development to be made visible. As Vygotsky (1997) wrote, the “Analysis provides us with the initial point of their genesis as well as the initial point of the whole method” (p. 41). In the sample of chapters analysed, most of the studies do not specially seek to examine the beginnings of particular forms of development, because they were interested in particular systems as they were currently operating – yet the methodological principles actually allowed for this. For instance, Gedera (2016) focused on determining the contradictions that affected students’ engagement in a university blended learning course. These systems were already in operation. However, through examining the systems in place holistically, it became possible to notice the contradictions, and these contradictions in turn represented the original contradictions that gave birth to the concrete system under investigation – that is, their genesis.

Unit

Vygotsky (1987) stated that we must “identify those units in which the characteristics of the whole are present, even though they may be manifested in altered form. Using this model of analysis, it must attempt to resolve the concrete problems that face us” (p. 47). This idea was introduced in the introduction where Engeström, Hakkarainen and Hedgaard reference the germ cell or unit as the basic inner relationship of the object system. The unit is a key concept in Cultural-Historical Theory, and when discussed as the basic inner relationship of the object system as referenced by Engeström, Hakkarainen and Hedgaard, we see it is also important in Activity Theory.

Determining what is the essence or basic unit of relations was first discussed by Vygotsky (1987) in the context of research method. Specifically, Vygotsky’s (1987) methodology encompassed two methods of analysis. One approach he argued was designed to examine the elements, whereby an atomistic approach was adopted
where the whole is broken down into the simplest components or elements. He suggested that this approach lost the properties of the whole. He cites the example of breaking down water (whole) into its elements (hydrogen and oxygen atoms). Vygotsky (1987) suggested that in this approach the analysis is flawed because the properties of the whole no longer exist in each of the elements, and therefore the results (elements) cannot help explain the relationship between concrete form and the concrete diversity encountered in everyday life. It is not possible to fully research the initial and final forms or examine the dynamic processes in motion (or the process of developing). Vygotsky said that this type of conceptualisation did not “help us untangle completely the whole thread of which they are the end” (Vygotsky, 1997, pp. 41–42) and it “causes the researcher to ignore the unified and integral nature of the process being studied” (Vygotsky, 1987, p. 46).

In contrast, Vygotsky’s (1987) second method focused on units, whereby the researcher breaks down the whole into units that retain the properties of the whole. He argued that the latter method retained the dynamic and relational nature of the whole. He showed “…how the great is revealed in the small” (Vygotsky, 1997, p. 41). Vygotsky (1987) stated that “the term “unit” designates a product of analysis that possesses all the basic characteristics of the whole. The unit is a vital and irreducible part of the whole” (p. 46).

The research that constitutes the Vygotsky project also focuses on determining the internal relations. That is, the germ cell or unit of the system that is being studied. We see this in most of the 11 chapters where an activity system is presented and the relations between the constituting characteristics is explicitly shown so that insights into the development of that system (or otherwise) can be determined. In each of the 11 studies, the researchers have kept the whole system together, and have sought to examine the characteristics of that system as relationships – thus constituting a unit of analysis that reveals the object of the system, and as is discussed in the next section, the basic contradictions that develop that system (or not).

**Historical Development**

The concept of unit on its own was not enough to fully appreciate the complexity of whole systems that are in the process of change. Vygotsky (1997) suggested that, “To study something historically means to study it in motion” (p. 43). The historical dimensions of a cultural-historical methodology foregrounds dynamic motion across time and across generations, whereby the past is present in the moment – as we might see in the teacher union movement where the analysis of previously published material in the public domain about the teachers’ union were examined from the perspective of teachers, parents, politicians and society in general (Harness & Yamagata-Lynch, 2016). We also see this in the work of Otrel-Cass, Andreasen and Bang (2016) who state that Activity Theory allowed them to take note of the history of standardised testing in Denmark, where their research was located, and to situate and shape their interpretations based on this understanding. Vygotsky (1997) argued that, “the past
and present are inseparably merged” (p. 41). This causes many challenges for the researcher interested to examine institutional, societal and the human condition as a system. Many institutionalised practices have become fossilised, and unearthing their origins or the process of their development is challenging. This methodological challenge was first noted by Vygotsky (1997) when he said:

...something might be said about human behavior by these weathered, historical scraps which have lost their meaning, these psychological survivors of a remote past that enter into the common tissue of behavior in an alien body, so atypical, impersonal, having lost almost all meaning in the mental adaption of modern human. (p. 40)

Tables 1.1 and 1.2 show how the weathered, historical and routinised dimensions of human practices are framed through the methods of CHAT, Activity Theory, and Sociocultural Theory, and in so doing reveal their inner contradictions. For instance, when the perspectives of teachers, the students, and the curriculum (as societal expectation) are brought together through interview data, document analysis and focus group sessions (see Table 1.2) contradictions emerge. Harness and Yamagata-Lynch (2016) found that although the public domain sources they examined, which on the surface appeared to be harmless presentations of figures, the analysis undertaken revealed a politicised and one-sided presentation of information about the activities of the teachers’ union. They argue that “Teacher unions seem to be in tension with everyone from parents, politicians, government officials, political factions, teachers not associated with the unions, and even those within their own ranks, neoliberalism, and the very ideas purported democratic principles themselves these tensions within and outside the teachers’ union contribute to create a hostile environment for all involved”. This weathered and routinised perception of teachers’ unions cemented in the public domain in newspaper articles is commonplace in many fields of research, requiring different kinds of research tools.

Vygotsky introduced the metaphor of the fossil to explain the fossilisation process and the need for methods that would support better understanding of systems. He gives the following examples to demonstrate how researchers have dealt with this problem:

The zoologist reconstructs a whole skeleton from an insignificant fragment of bone of some excavated animal and seen as a picture of its life. An ancient coin, which has no value as a coin, frequently reveals to the archeologist a complex historical problem. The historian deciphering hieroglyphics scratched into stone, penetrates into the depths of vanished ages. The doctor diagnoses illness from insignificant symptoms. (Vygotsky, 1997, p. 40)

In analysing newspaper articles to find their contradictions in the objects of the differing groups, Harness and Yamagata-Lynch (2016) were able to see how skewed reporting took place and reinforced publically endorsed perceptions of teachers’ unions. We also see examples of how researchers have tackled the fossilisation
problem methodologically in the new research context of online learning. For instance, Li (2016) noted that when examining the activity system of tutors responding to assessment of written work, that emotional reactions to contextual factors became evident. Li also noted how tutors recognised and regulated the emotional reactions of students to feedback, where contradiction in relation to contextual factors had become evident. The convergences and divergences of teacher beliefs and practices were possible to discern when Activity Theory was used to gather and analyse data about the online activity system. Without examining emotions in the context of a predominantly cognitive activity, it would have been difficult to find the contradictions and to unpick the beliefs about practices that were guiding the assessment feedback. Finding the right methods to make visible the historical dimensions of large quantities of empirical data gathered was discussed by Pohio (2016), who showed how Activity Theory gave a useful visual framework for understanding the organisational culture that stakeholders could better understand, giving the possibilities for examining contradictions within remnants of historically formed practices.

In each of these studies, a holistic conception of the research was achieved, as the net was cast to include how the researcher set up the context for the identification and analysis of the contradictions inherent in the system. We now turn to the special role the researcher has in Cultural-Historical Theory.

**Theoretical Robustness**

The role and position of the researcher is always included in the generation of data in cultural-historical research. This holistic perspective supports both the validity and reliability of the data being gathered. We see this when the researcher makes visible the theoretical concepts used for the interpretation of the results, including her or his conception of development and the themes emerging from the study (Hedegaard, 2008). This establishes and increases *validity*. For example, Otrel-Cass, Andreasen and Bang (2016) explain that through the theoretical lens of Activity Theory the researchers adopted a reflexive position in order to better understand how the societal need for national testing, institutionalised and operationalised testing into practice, and what this meant for the personal motives and new demands made by the assessment practice that was currently being experienced by students. Because Activity Theory was predominantly used across the data sets, this ensured that valid data true to the theoretical framework of the research was being generated and interpreted.

*Reliability* in cultural-historical research is fostered when the researcher is clear about the object of the research (Hedegaard, 2008). For instance, Aguayo (2016) in examining how an online community supports education for sustainability explicitly examined student motivation in relation to the context of the participants. He noted that, “it appeared that these motivations were related to participants’ particular socio-cultural context and individual backgrounds, making motivated actions relevant
and meaningful within their own milieu, linked to their individual historical, socio-cultural, technological, educational and ecological realities”. Important here is how Aguayo (2016) clearly stated the study goals (what development is being considered) and used methods (how to study that development) to examine the activity system under study, increasing reliability of the data being gathered. Table 1.2 shows how this was achieved across all the studies analysed.

Role of the Researcher

In Vygotsky’s genetic approach where he sought to determine the genesis of development, he was careful to include the researcher in the fullness of the data gathering, critiquing approaches that did not do so. For instance,

…the experimenter creates the required attitude in the subject, elicits the process to be observed and establishes connections, but here, the psychological role of the instruction itself is usually ignored. The researcher then deals with the associations, processes, etc. created and elicited by the instruction just as if they appeared in the natural course in themselves without the instruction. (Vygotsky, 1997, p. 36)

Vygotsky (1997) argued that just when the data gathering commences, researchers often exclude valuable data, as we might see during the process of transitioning into a study site in naturalistic settings. The data gathered at these times is important for gaining a fuller picture, one that needs to be included to ensure validity in the analysis. Studying how the research context is established and the ongoing role of the researcher during the data gathering process gives greater insights into the process of development. Including the researcher as part of the data gathering process is exemplified by Tay and Lim (2016) when examining one-to-one computing, and Ramanair (2016) when examining if Moodle supported the development of English expression. How the researcher was embedded and what role they assumed or the conditions they created in the 11 studies, were not always made as visible as a cultural-historical methodology would suggest is needed.

CONCLUSION

In this chapter the relations between learning and development have been examined through an analysis of the content of 11 research chapters, where what is developing and how this development can be studied was undertaken. These studies examined continuous change and development through contradiction within an activity system. By noting the contradictions or tensions of the activity system, it becomes possible to make conscious the relations between the characteristics of that system, and through this begin to determine the germ cell or unit that reflects the basic inner relationship of the object system.
The broad range of theoretical concepts drawn upon by the 11 research groups that undertook the research that formed the basis of the analysis presented in this chapter, have a family connection, and these were collectively named as the Vygotsky project. What is foundational to each is the search for a unit that determines the inner core relationships that are reflective of the whole activity system. Determining what is to develop and how the unit of development should be analysed, are also foundational to the theories discussed under the Vygotsky project.

The 11 chapters have primarily drawn upon Activity Theory, CHAT, and/or Sociocultural Theory. The researchers have mostly referenced their theoretical framework back to either Leontiev or Vygotsky or have discussed their theoretical stance in the context of Engeström and other contemporary scholars. This theoretical breadth reflects the diversity that now exists in the literature and represents a new form of theoretical integrity, where there is an urgent need to categorise and name this approach to theoretically framing study designs. Using the name of the Vygotsky project for this purpose (although not originally its intention) captures the tendency to blend theoretical concepts across a broader range of scholarly works in educational research. Using the term the Vygotsky project identifies a place in the theoretical context of cultural-historical research for this theoretical blending of concepts. The point here is not to make judgments, but rather to notice this approach and because of its prevalence, to categorise and name this way of working. It will always be at the behest of the reviewers to determine the value of blending theoretical concepts for specific study designs, where broader conceptual tools may be needed.

Educational research that draws upon the theories coming from the collectively named Vygotsky project features the concept of contradictions, or crisis or some form of tension or transition. Studies of this kind look for the “original contradiction that has given birth to the concrete system under investigation” (Engeström, Hakkarainen, & Hedgaard, 1984, p. 160) so that the basic inner relationship of its object system can be revealed. Davydov (2008) said that, “Practical, object-oriented productive activity – labor – is the basis of all human cognition” (p. 85) thus linking labour with education. The most important dimension that separates one type of activity from another is the object of the activity. In the context of education, it can be argued that the goal of the learning activity is to produce citizens who have knowledge and skills to be part of society. It can be argued that in the early childhood period that the object of play activity is action in an imaginary situation, and in the world of work the “object of work activity is the result of labour process”. For schools then, the object of the “learning activity must be the learning subject” as they develop through education (Engeström, Hakkarainen, & Hedgaard, 1984, p. 160). Understanding the object of each educational setting across the 11 chapters through a process of identifying the smallest unit that is characteristic of the whole system was exemplified through the identification of the contradictions.

The methodological foundations for studying education from a cultural-historical perspective, as originally conceptualised by Vygotsky, have provided a strong basis
for the emergence of the Vygotsky project. In the self-conscious development of educational research from within this tradition, tools that study 1) the whole system of development, 2) that embed the researcher as part of the conditions of the research, 3) that look for the unit that characterises the whole, 4) that use the concept of contradiction or tension, and 5) where historically institutionalised practices lived in the moment are studied, collectively constitute the essence of what is the Vygotsky project. How the methods that sit under this are named and practiced will be variable, but these five dimensions characterise the essence of the whole Vygotsky project, extending the original concept from that of Stetsenko and Arievitch (2010) who introduced the idea of the family connections but who did not analyse what might constitute this connection. These five characteristics are unique to the work originally put forward by Vygotsky, and which have been further developed or used for educational research by the myriad of scholars who have followed since Vygotsky’s death. Collectively, when these works (empirical and theoretical) are framed by these five characteristics, they constitute the essence of the Vygotsky project. This unit or germ cell that characterises the methodology of the Vygotsky project for educational research gives new directions and methodological integrity for scholars seeking to use a mix of concepts from across Activity Theory, Sociocultural Theory, CHAT and Cultural-Historical Theory.

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