

The Excursion and Lecture Hall as Two Activity Systems Compared: The Case of Resource and Environmental Economics Class at Africa University - Zimbabwe

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Abstract

This paper uses the lenses of Cultural-Historic Activity Theory to address the question: What is the value of an educational excursion for fourth year students enrolled in a 4 year BSc Economics program at Africa University in Zimbabwe? The excursion is an integral part of a fourth year Resource and Environmental Economics module. This article compares the nature of student learning during the excursion with students' learning and interaction in the traditional formal lecture room as two different activity systems. Drawing on student reflections from the excursion evaluation forms, this study highlights and explores the unforeseen dynamics and tensions created during the excursion. It focuses on the importance of social interaction and illustrates that an excursion, with its more informal nature, and pedagogy of play and metaphors, offer learning opportunities not always possible in the formal lecture hall/ classroom. The major findings are that the excursion provides a different learning environment for personal and professional development; authentic learning associated with excursion can be promoted and supported by technology.

Keywords: Cultural-Historic Activity Theory, Authentic Learning, Excursion, Activity System, Zone of Proximal Development

Introduction

This paper uses the lenses of Cultural-Historic Activity Theory specifically the third generation as expounded by Engeström (1987; 2001) to address the question: What is the value of an

educational excursion for fourth year students enrolled in a 4 year BSc Economics program at Africa University in Zimbabwe?

The Resource and Environmental Economic module introduces theories of optimal use of natural resources and analysis issues related to current practices of use of resources. It also discusses issues of sustainability, conservation, and preservation. The module extensively applies graphical analyses and some mathematical models. Students are assigned a number of theoretical assignments and reading assignments. There is a requirement for students to write a paper on a relevant natural resource issue. The module explores the economics of natural resources such as fisheries, forests, fossil fuels and, minerals. Authentic learning is one of the key deliverables of the course to ensure graduates are able to contribute and make a difference when they get employment.

Using CHAT I argue and prove that excursion, which is less formal and in which the activity system morphs formal, assessment-driven, and rule-governed social behavior of a university curriculum (and overall activity) to an informal and rule-negotiating space, is a system that allows learners to come to the fore. In this space new tensions and, dramatic collisions or contradictions take place and assist in pushing the boundaries of the “zone of proximal development” to the outer limits and towards the ideal zone. With its more informal nature, and pedagogy of play and metaphors, offer learning opportunities not always possible in the formal lecture hall/ classroom.

The teaching and learning challenge

Despite various ongoing efforts and initiatives Africa University has not yet succeeded in achieving *authentic learning*.

The belief and conviction is that the challenges and limitations faced in the formal lecture can be addressed using excursions. The excursion as a different activity system is compared with the traditional classroom activity system using CHAT in an effort to investigate required intervention.

Methodology

Data is drawn from student reflections on the excursion evaluation forms and interviews of two excursion facilitators, with the objective of highlighting and exploring the unforeseen dynamics and tensions created during the excursion. The focus was on the importance of social interaction to establish if the excursion, with its more informal nature, and pedagogy of play and metaphors, offered learning opportunities not always possible in the formal lecture hall/ classroom.

At its core the excursion includes a visit to the Nyanga national park on the Eastern highlands of Zimbabwe. The park comprises of diverse fauna, flora, perennial rivers, and waterfalls, archaeological, historical, and cultural sites. It also contains accommodation and camping sites.

The re-mediated learning takes the form of individual and group observations, onsite lectures and practical demonstration by rangers, researchers, and scientists working for the national park. The content and nature of these onsite activities are pre-arranged by the lecturer, facilitator and the park authorities taking into account the course outline and key deliverables.

Cultural-Historical Activity theory specifically the third generation as propounded by Engeström (1987; 2001) is used to analyse the classroom and excursion activity systems. The template in figure 1 below was used.

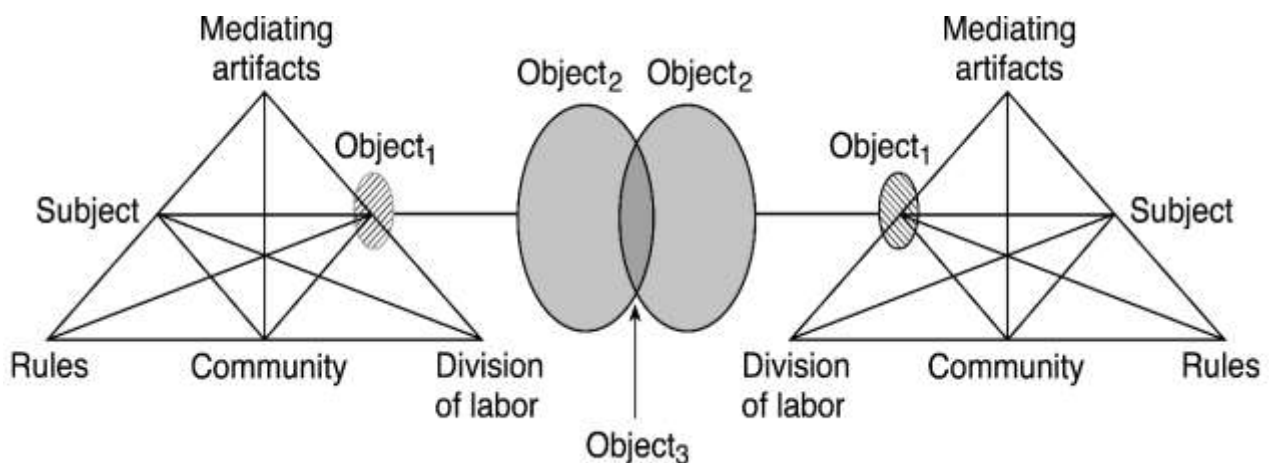


Figure 1 - Engeström's 3rd Generation of CHAT Model

Literature Review

Outlined in this section is an analysis and synthesis of literature on Cultural-Historical Activity Theory, Authentic Learning and Emerging Technologies as they directly related to the teaching and learning challenge that this paper seeks to address.

Cultural Historical Activity Theory - CHAT

CHAT is based largely on Lev Vygotsky's particular theories of cognition and learning and has its origin in the works of the historical philosopher Alexei Leont'ev', at Moscow State Lomonosov University during the 1960's. In subsequent years the implications of activity theory in organizational development have been promoted by the works of Yrjö Engeström's team at the Centre for Activity Theory and Developmental Work Research at the University of Helsinki, and Mike Cole at the Laboratory of Comparative Human Cognition at the University of California San Diego campus. (Capper & Williams, 2004).

Literature is full of different versions and interpretations of activity theory notably: Vygotsky (1978, 1981); Lantolf & Appel (1994); Kaptelinin, Nardi, & Macaulay (1999); Cole & Engeström (1993); Jonassen and Murphy (1999); Cole & Engeström (1993) and Barab et al., (2004). All these researchers and theorists invariably confirm and variously concur that activity theory is "...a powerful socio-cultural and socio-historical lens through which we can analyse most forms of human activity. It focuses on the interaction of human activity and consciousness within its relevant environmental context..." (Jonassen & Murphy, 1999).

Activity Theory helps us to: (a) Look beyond the individual learner, the interface and the material to understand the social material relations that affect complex human learning, people's interactions with others as mediated by tools; (b) Understand how people use cultural tools to teach and learn, to change and be changed, through interactions; (c) Prompts us to ask how we can "re-mediate" our interactions by changing our tools or the ways we share them with others (Russell, 2004).

There are many approaches into introducing activity theory with the evolutionary approach being the most common. Capper and Williams (2004), use a seven proposition approach to

introduce the activity theory. I adopt the proposition approach in this paper because it is simple, modular and stepwise nature makes it easier to follow.

According to Capper and Williams (2004), three main components characterize a CHAT based analysis: (a) A systems component – that helps us to construct meanings from situations; (b) A learning component – a method of learning from those meanings; (c) A developmental component – that allows us to expand those meanings towards action. All the three components can be constructed from following seven basic propositions, in a modular and stepwise manner that is simple to follow.

1st Proposition – The Fundamental Proposition

“Activity Theory is based on the proposition that learning is a social and cultural process not simply a biological process.”(Capper & Williams, 2004, p.3).

The proposition means that learning is a complex function and not transferable from one situation to another. It also emphasizes that the environment is an important factor of the learning process.

2nd Proposition

“Activity is what happens when human beings operate on their environment in order to satisfy a need state.”(Capper & Williams, 2004, p.3).

As portrayed in figure 2 below our motive determines our action and not the other way round. This is because same actions may lead to different outcomes. “Similarly there are many different actions we might take to satisfy the same need. For example one farmer might try to become more innovative by reading books, while another might set up a discussion group with other farmers to achieve the same end.” (Capper & Williams, 2004, p.4).

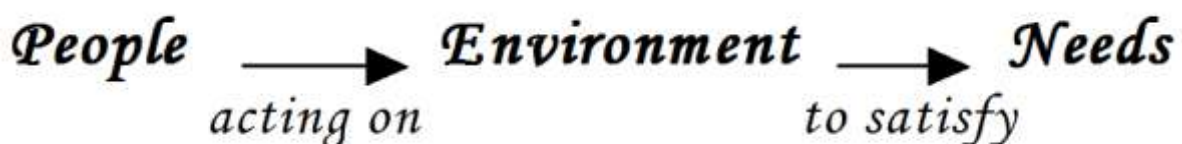


Figure 2:Source Capper& Williams (2004)

3rd Proposition

“Information must flow through the activity system in order for the desired result to be achieved.”(Capper & Williams, 2004, p.4).

Figure 3 below shows how information must flow in the activity system.

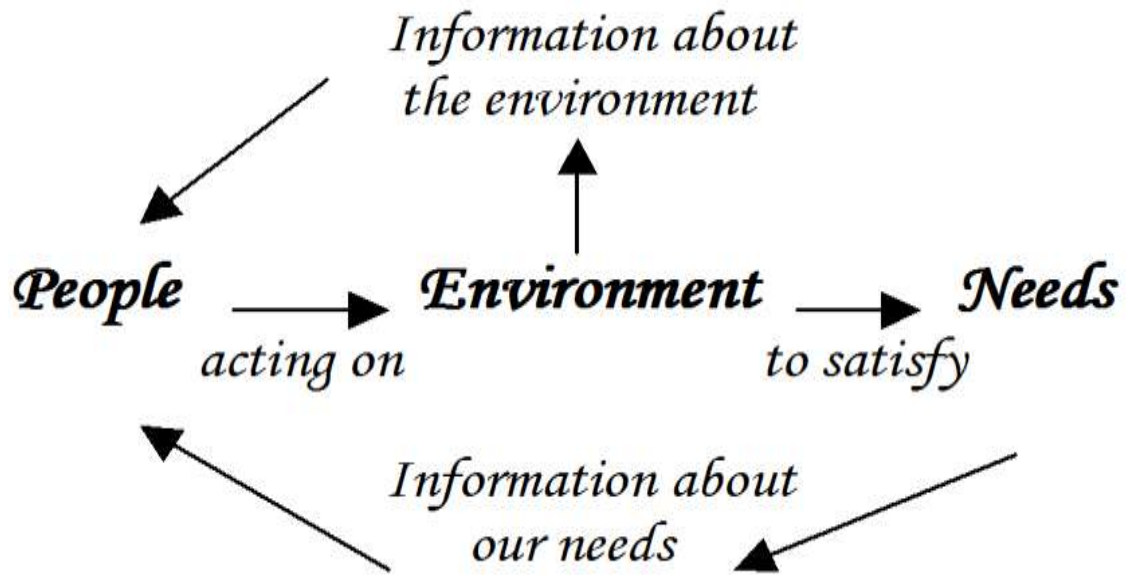


Figure 3:Source Capper& Williams (2004)

There are two main types of information we get from the environment as depicted in figure 4 below.

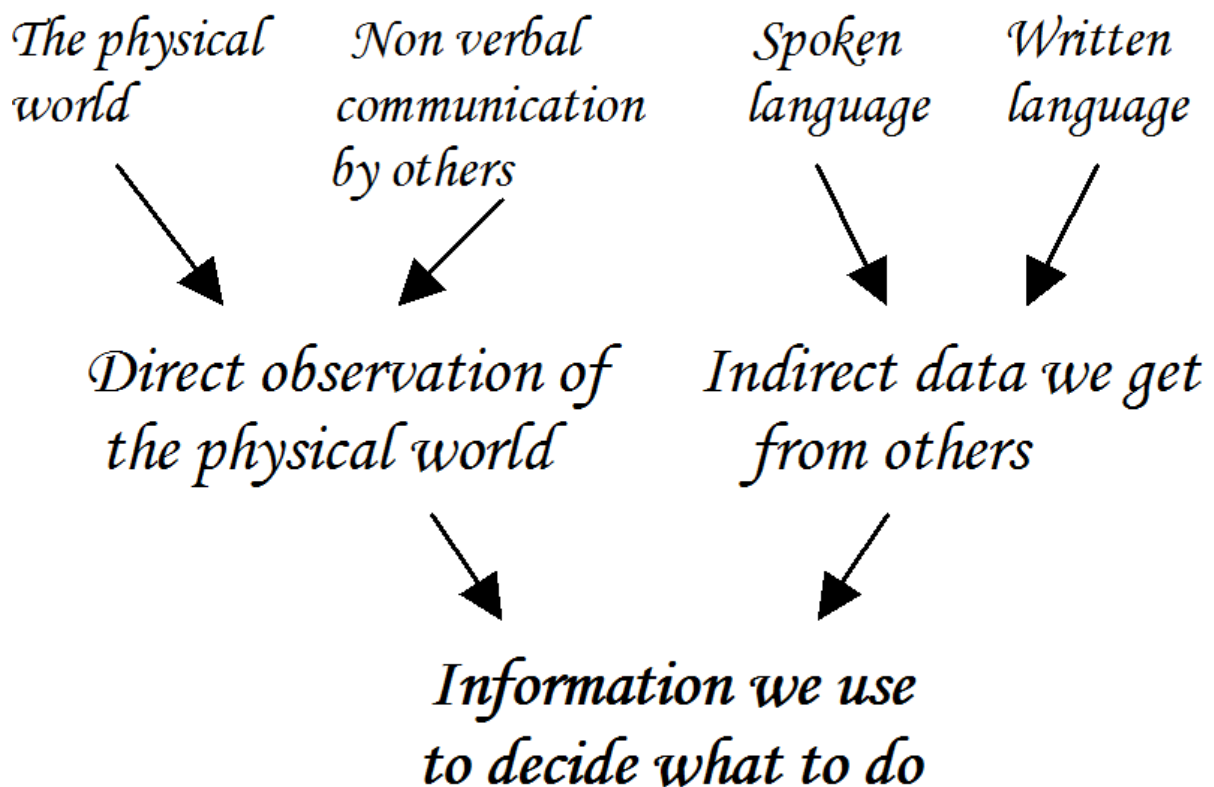


Figure 4:Source Capper& Williams (2004)

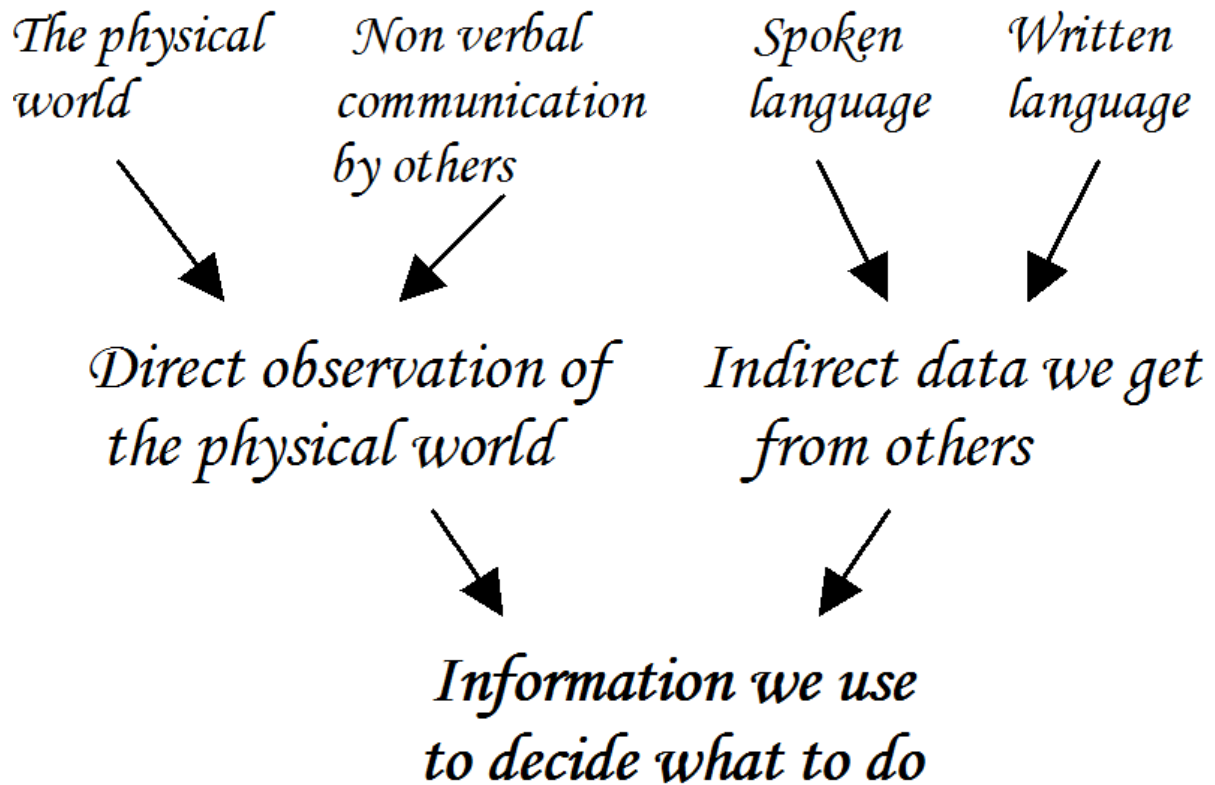


Figure 5:Source Capper& Williams (2004)

4th Proposition

“We use tools to manipulate our environment and to get information from the environment. The tools we use *mediate* (or shape) the way we do the work.”(Capper & Williams, 2004, p.7).

Activity Theory emphasises tool-mediated action in context. People think and learn with tools. External tools – books, computers, telecommunication networks. Internal tools – language, concepts, scripts.

Mediation according to Vygotsky refers to the part played by other significant people in the learner’s lives, people who enhance their learning by selecting and shaping the learning experiences presented to them. These cultural tools, such as a particular language, a mathematical system or a physical object such as a textbook "provide the link or bridge between the concrete actions carried out by individuals and groups, on the one hand, and cultural, institutional, and historical settings, on the other..." Wertsch et al (1995; p 21)

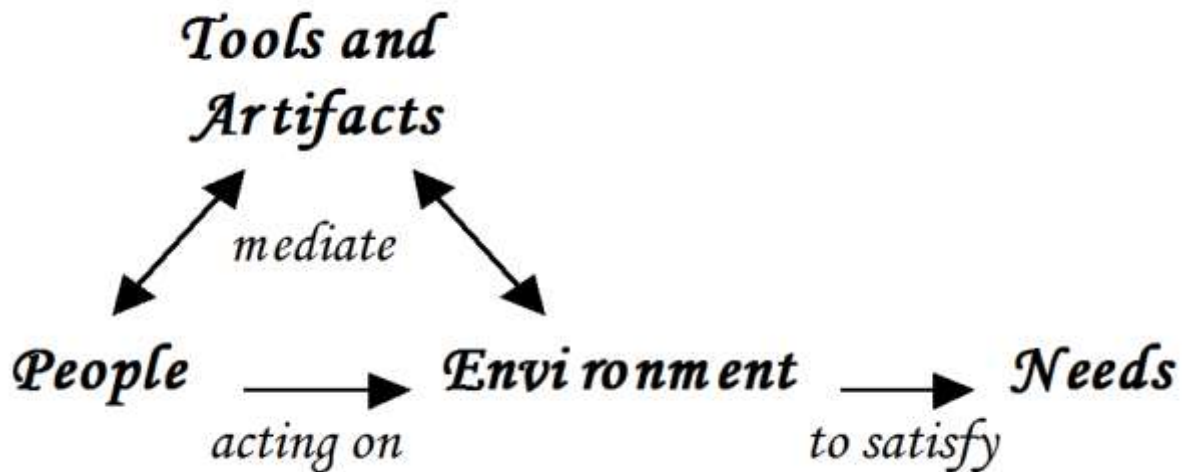


Figure 6:Source Capper& Williams (2004)

5th Proposition

“The human systems – social, cultural and organizational – within which we work, also mediate the ways in which we conduct our activities.”(Capper & Williams, 2004, p.9). Learning not about internalisation of discrete information or skills by individuals but by expanding involvement over time social as well as intellectual with other people or tools available in their culture. Figure 7 shows how rules, community, and organization fit into the learning process.

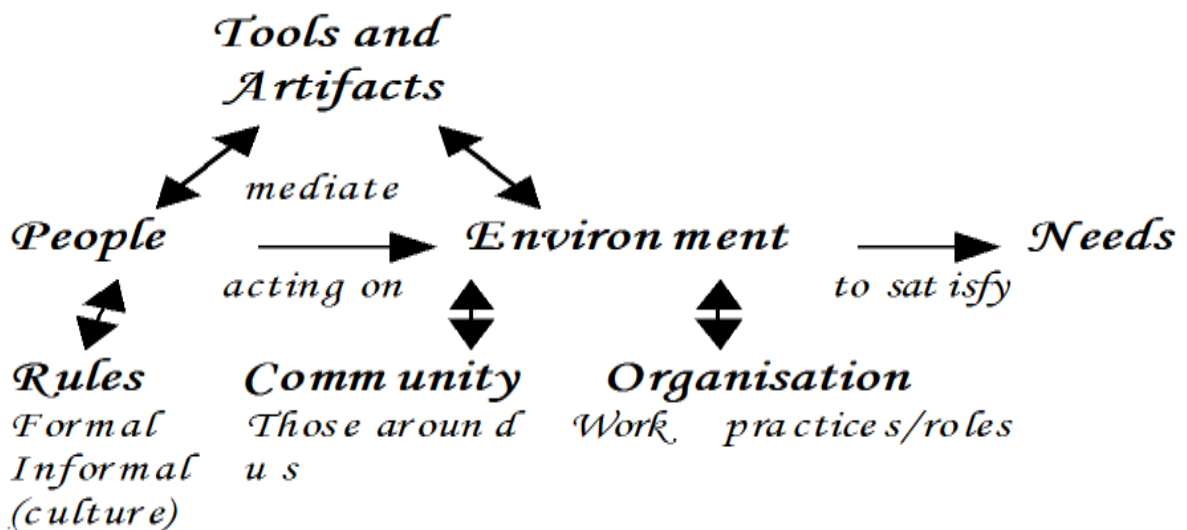


Figure 7:Source Capper& Williams (2004)

Figure 8 is a triangular representation of all the factors that constitute an activity system.

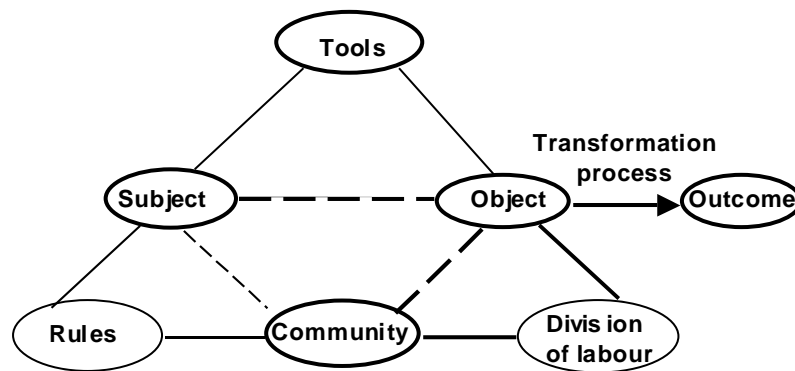


Figure 8: Source Capper & Williams (2004)

6th Proposition – The Learning Proposition

“When the tools, rules, community and organization operate as expected those within an activity system proceed by conducting standardized tasks with predictable results. But the system will often be interrupted by unanticipated events (disturbances), or surface underlying tensions between elements of the system (contradictions). When a team, program or organization encounters these it will founder unless it is able to *learn* how to deal with these issues. Thus disturbances and contradictions in system components allow us to learn about the “real” world.”(Capper & Williams, 2004, p.11).

According to Capper and Williams contradictions fall into four categories:

1. *Within* components of an activity system (e.g. between rules)
2. *Between* components of an activity system (e.g. between rules and object)
3. *Between activity systems* (e.g. a tool used in an organization’s object to reduce injuries, and another tool used to support the same organization’s object to sell product)
4. *Historical disturbance* – between what is now and how it used to be (i.e. between a newly introduced tool and an old rule)”

The relationship and interplay amongst these relationships and how they lead to the cycle of expansive learning is depicted in Figure 9 below.

7th Proposition – The Developmental Proposition

“When a contradiction’s potential as a springboard is triggered by the actions of system participants they enter a ‘Cycle of Expansive Learning’” (Capper & Williams, 2004, p.13).

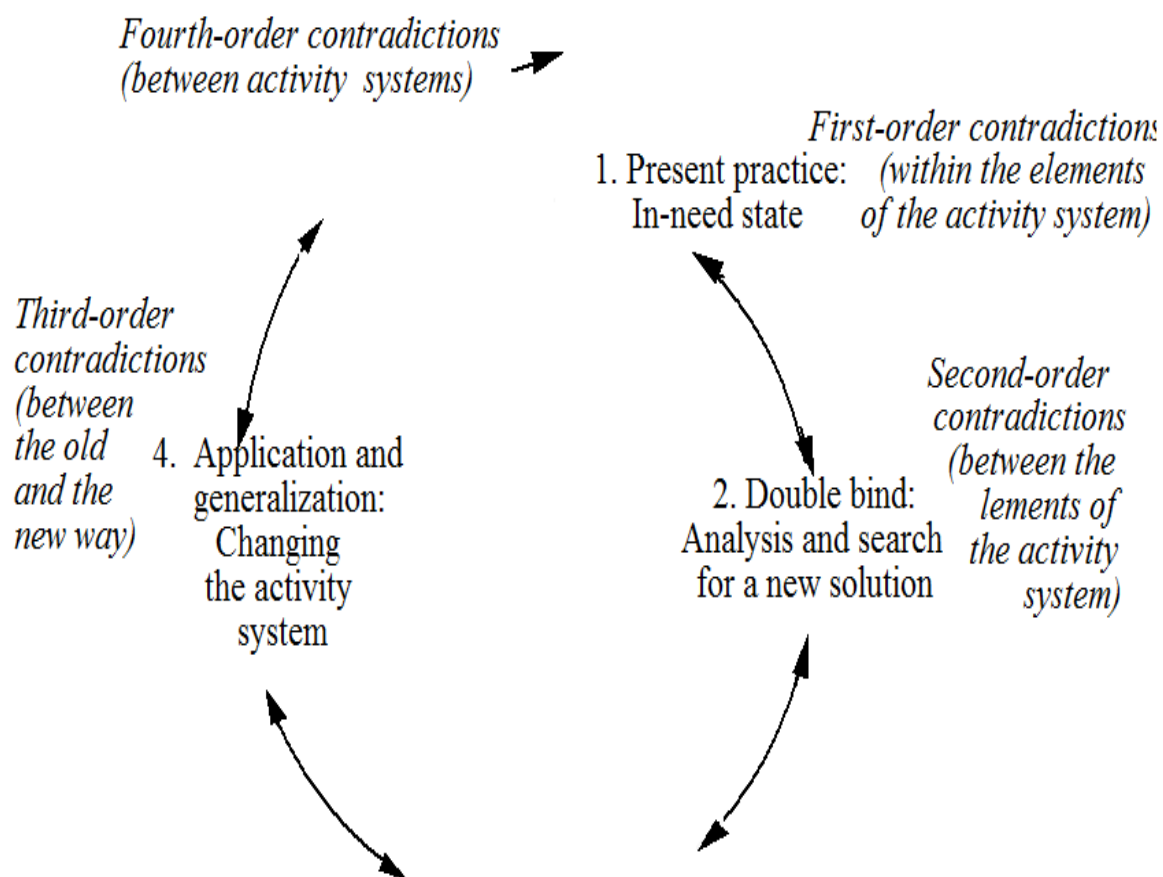


Figure 9: Source Capper & Williams (2004)

The Third Generation – Inter-activity Perspectives

According Engeström (2001), the third generation activity theory expands the unit of analysis from one activity system to at least two interacting activity systems as shown in **Figure 10** as the minimal unit of analysis. The object of the 3rd generation. Activity Theory as proposed by Engeström is to develop conceptual tools to help understanding dialogues, multiple perspectives, and networks of interacting activity systems. Engeström was also interested in the process of social transformation and this includes the structure of the social world in analysis, also taking into account the conflictual nature of social practice.

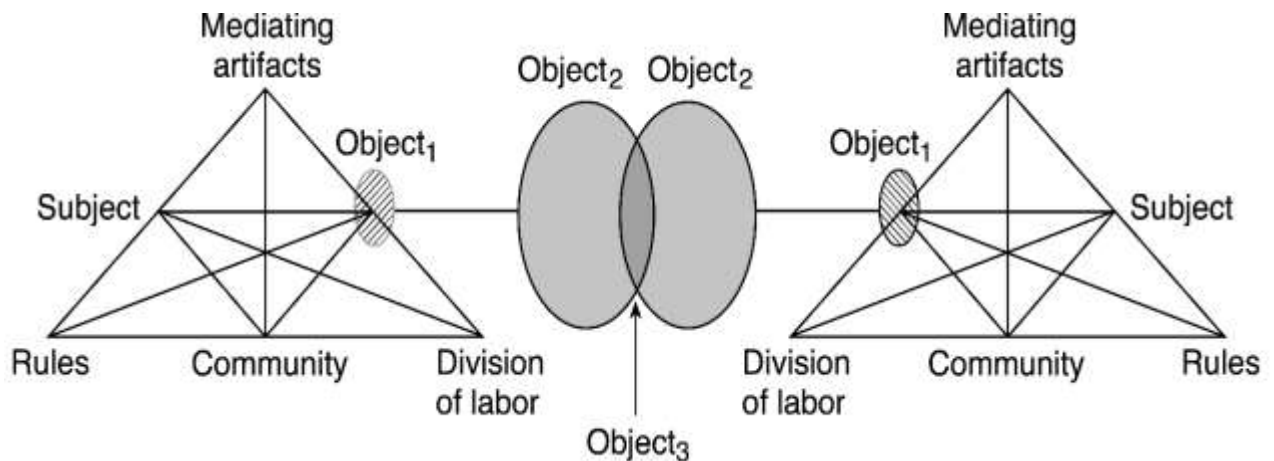


Figure 10- Engeström's 3rd Generation of AT Model

4.2 Authentic learning and technology

Authentic Learning (AL) is learning that translates into real world relevance and application. Traditionally it means learning by doing as characterized by apprenticeship learning. In the technology world the internet and a variety of communication, visualization, and simulation technologies now make it possible to offer students authentic learning experiences ranging from experimentation to real-world problem solving. (Lombardi, 2007, p.1).

According to Herrington & Kervin (2007), authentic learning environments should:

1. Provide authentic contexts that reflect the way the knowledge will be used in real life.
2. Provide authentic activities
3. Provide access to expert performances and the modelling of processes
4. Provide multiple roles and perspectives
5. Support collaborative construction of knowledge
6. Promote reflection to enable abstractions to be formed
7. Promote articulation to enable tacit knowledge to be made explicit
8. Provide coaching by the teacher at critical times, and scaffolding and fading of teacher support
9. Provide for authentic, integrated assessment of learning within the tasks

Authentic Learning directly relates to the Africa University teaching and learning challenge i.e. the motive behind this research paper. The nine points are a sum total of the outcome the Resource and Environmental Economics excursion seeks to achieve.

There is a widespread literature and research evidence linking emerging technologies to positive outcomes in teaching and learning [Valetsianos, 2010; Association for Learning Technology (ALT), 2010; Sharples et al., 2012; Lombardi, 2007; Bower, 2010]

Use of technology, particularly emerging technologies in education continue to receive attention "... there is a growing trend in English-speaking education [UK and USA] systems to

assume a technology rich environment for learning, and to investigate the impact of particular pedagogical approaches or learning strategies within that context.”(Association for Learning Technology (ALT), 2010, p.5). A related study by Ng’ambi et al. (in press) on the use of emerging technologies in South African higher education, also confirmed a positive motivation and adoption rate of emerging technologies. What is not clear to many stakeholders is “What works, in what context(s), to what extent – if there is evidence – why and/or how?” (ALT, 2010, p.6). Through a series of reports ALT presents the following research based evidence: “(a) Evidence of general performance enhancements through e-learning; (b) Evidence of benefits from institutional (strategic) approaches to learning; (c) Evidence of enhancements to the student experience of learning; (d) Evidence of generally enhanced learning outcomes; (e) Enhanced learning outcomes from specific types of technology and intervention; (f) Evidence concerning access and assessment”.

Excursion as an activity system

Figure 11, shows Tools, Subject, Rules, Community, Division of labour, Outcome, and Object for an excursion as an activity system.

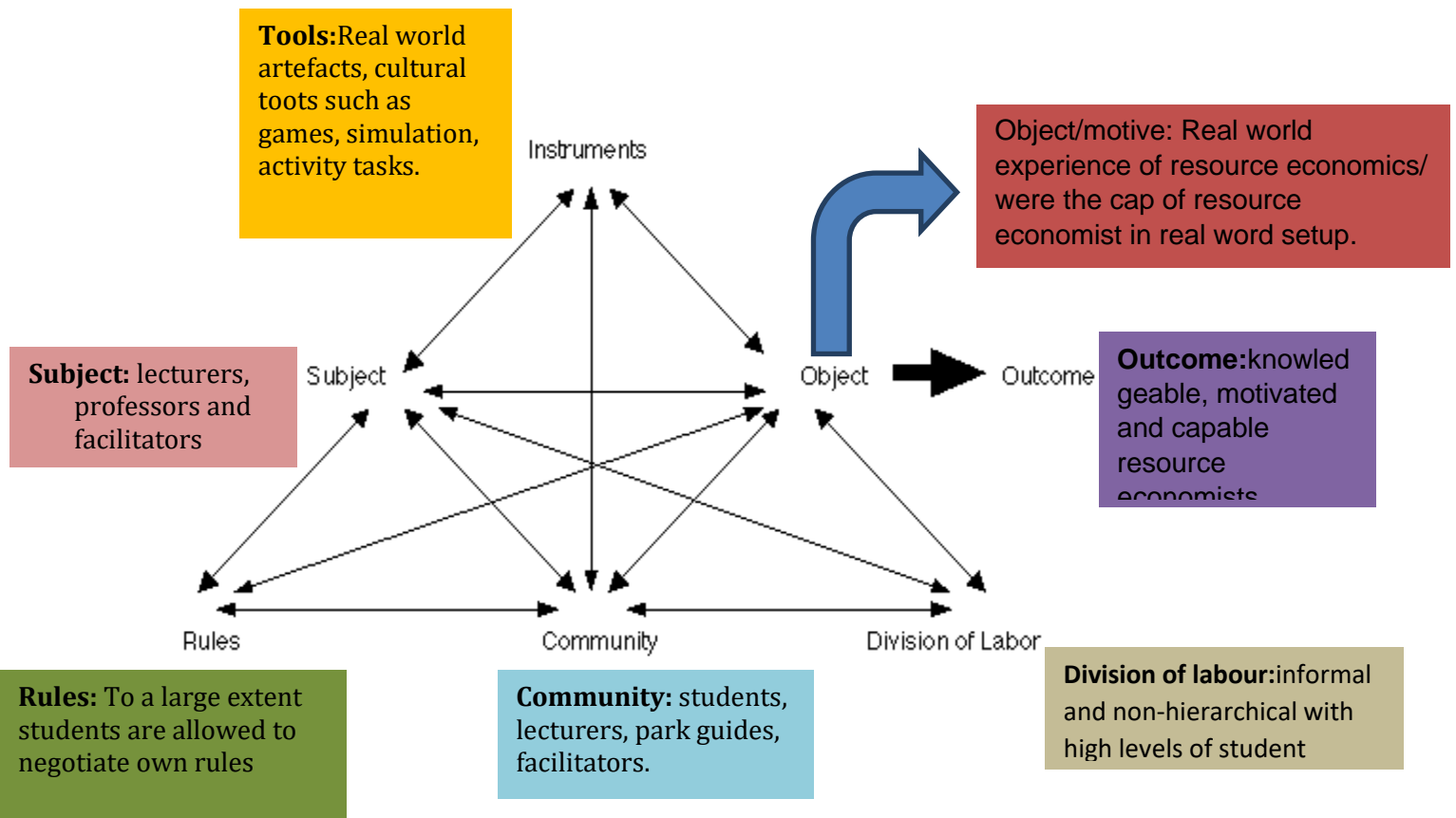


Figure 11: Excursion as an activity system (2004)

Comparison and contradictions

Figure 12 below depicts a comparison of tension in classroom and excursion activity systems. The subject, object, tools, rules, community, division of labour and outcome are outline and explained below in summary form to complement the diagram.

The Subject

In the formal classroom is the lecturer or professor. During the excursion the role of the lecturer/professor shifts to a dual role of being that of a teacher and colleague (a human social mate).

The Object

In the formal classroom the object is: A final year student wanting to pass his/her resource economics module. On the excursion the object is: Putting on a cap of a natural resource economist.

The Tools

In the classroom the tools are: Mainly talk, board and chalk with no tool mediation. During the excursion the tools are: A real world object complemented with pedagogy of play and simulations, metaphors and adventure.

The Rules

In the classroom the rules are: Formal teaching and learning university rules as stated in the prospectus and academic regulations. During the excursion: Rules are negotiated with the students (within a certain degree of freedom).

The Community

On campus: The community is well defined and bounded from lecturers, student community and university teaching and learning facilities. On the excursion: The community is open, unbounded, disruptive and students operate out of their comfort zones.

Division of Labour

In the classroom: The student is mainly a reactor and receiver. On the excursion: the student is *own navigator, activist and professional*.

The Outcome

On the classroom setting outcome is resource economics graduates who have met the evaluation criteria. On the excursion the outcome is knowledgeable, experienced resource and environmental economists.

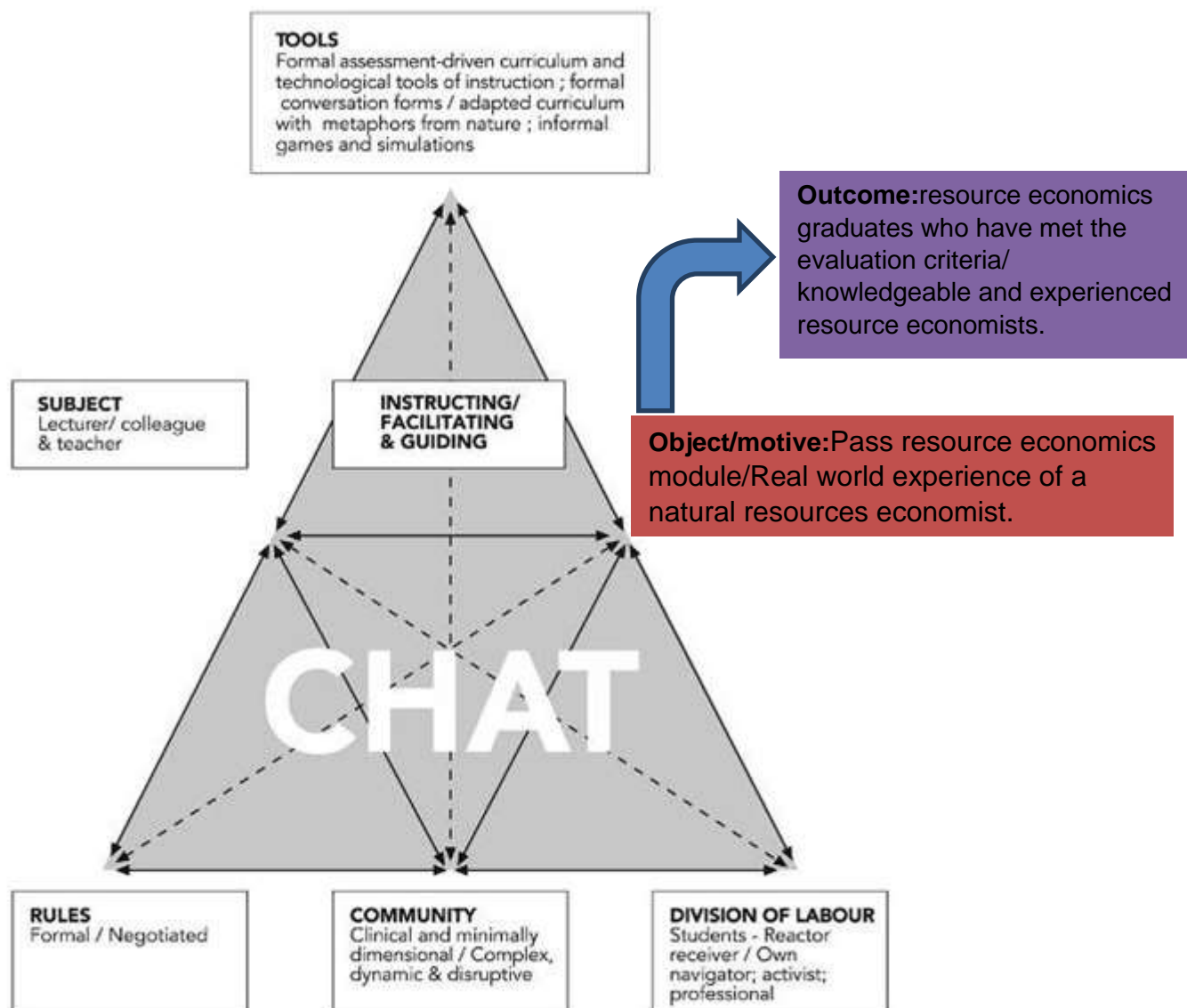


Figure 12: Tensions in the activity systems: classroom vs. excursion learning (After Beaty, 2009)

Contradictions

Contradictions are surface underlying tensions between elements of the system (Russell, 2004). Disturbances and contradictions are fundamental concepts in Activity Theory.

“Disturbances provide the opportunity for learning and innovation. If disturbances are seen as irritations – ‘problems’ to be overcome – then it is unlikely that stakeholders will progress beyond ‘fire fighting’. But Activity Theory points to disturbances and contradictions as potential springboards for learning, innovation and development.” (Capper & Williams, 2004, pp.12-3)

The goal of the excursion is to provide learning outcome desirable in the formal school within a very different activity system in other words to remediate learning using different tools, object/motive, rules community and division of labour.

From the point of view of students participating in the excursion, the object/motive is to socialize and play together successfully i.e. have fun and relieve themselves of the pressure of hard work done during the semester since this excursion is the last activity of the module. This is confirmed by analysis of the excursion evaluation forms. The words *enjoyed, relaxed, relieved* were coming ahead of *learn, practical, experienced* in the overall comment of the excursion evaluation forms. However there are also some students who got the object/motive of the excursion right and began by relating their learning experiences in the overall comment.

The designers and facilitators of the excursion re-mediated the activity of the classroom learning by carefully and deliberately mixing some classroom with game like activities to avoid contradictions of object/motive.

Similar object/motive contradiction can be traced in the classroom activity system. The students may misconstrue the object/motive as that of making them understand the concepts and be able to repeat and reproduce them under exam conditions and to relate that to the key deliverable of authentic learning i.e. being able to apply these in real world context.

Both activity systems pose contradictions and in this section I have only looked at the object/motive contradictions. The classroom contradiction will open a zone of proximal development to be addressed by the excursion and similarly the excursion will open zone of proximal development that may be complemented by the formal classroom setting. This creates the cycle of expansive learning, confirming the importance and effectiveness of the activity theory.

Conclusions and recommendations

The excursion makes students traverse not only an epistemological space but also a sociocultural space as they move from classroom activity system into the real world activity system.

An analysis of feedback the excursion evaluation forms, confirms that an excursion which is less formal and in which the activity system morphs formal, assessment-driven, and rule-governed social behavior of a university curriculum (and overall activity) to an informal and rule-negotiating space, is a system that allows learners to come to the fore. In this space new tensions and, dramatic collisions or contradictions take place and assist in pushing the boundaries of the “zone of proximal development” to the outer limits and towards the ideal zone. With its more informal nature, and pedagogy of play and metaphors, offer learning opportunities not always possible in the formal lecture hall/ classroom.

The comparisons of the two activity systems reveal that the two activity systems raise contradictions that open zones of proximal development and that the two systems are complementary. A mixture of formal classroom and excursion complement each other and are both necessary to achieve authentic learning.

The foregoing literature review confirms that technology particularly emerging technologies can be used to achieve authentic learning. Activity theory, principles of authentic learning and technology can be blended with classroom and excursion activity systems can be blended together to achieve more desirable outcomes. Although this is not elaborated in detail in this paper, I strongly recommend this blended approach. Using blended approach principles to design learning tasks can provide a learning environment that is not both innovative and

rewarding for the students and teachers that help achieve authentic learning. "Using technology to implement or enhance such principles further increases their appeal to students, and also provides powerful tools to assist their learning. While not crucial, there is little doubt that different forms of technology afford great potential as enablers for each of the nine authentic principles listed above." (Herrington & Kervin, 2007, p.5).

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