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Learning as a game: exploring cultural differences between teachers and learners using a team learning system

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LEARNING AS A GAME: EXPLORING CULTURAL
DIFFERENCES BETWEEN TEACHERS AND LEARNERS
USING A TEAM LEARNING SYSTEM

by

JOHN G. FINDLAY

M.B.A. (Southern Cross)

A dissertation submitted for the degree of

Doctor of Philosophy of

The University of Wollongong

2009

DECLARATION

I certify that the substance of this thesis has not previously been submitted for any degree and is not being submitted for any degree.

I certify that any help received in preparing this thesis and all sources used have been acknowledged.

Signed

.....
JOHN G. FINDLAY

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ABSTRACT

The research presented in this thesis aims to investigate the first-time use of a tool for collective knowledge creation in order to explain how cultural differences between teachers and learners in the context of the historical development of tools contributes to student engagement and learning. To this end, a study was conducted at a secondary school in the United Kingdom with 92 teachers and students. The study was exploratory and is presented as a series of case studies, using a mixed method approach including discourse analysis and social network analysis.

The study was interpreted via a complexity-activity framework based on cultural-historical activity theory (activity theory) as propounded by the original theorists (Luria, 1976; Vygotsky, 1978, 1986; Leont'ev, 1978) and more recent researchers (Engestrom, 1987; Miettinen, 1999; Tobach, 1999; Hedegaard, 2005). It is also informed by other theories of development or emergence including complexity theory and co-evolution (Cohen & Stewart, 1994; Kauffman, 1995), innovation theory (Rogers, 1983; Foster, 1987), brain sciences (Schore, 2000; Freeman, 2000; Goldberg, 2001) flow theory (Csikszentmihalyi, 1975) and theories of team development (Tuckman, 1965; Schein, 1988; Losada, 1999). Activity theory holds that humans develop culturally as well as genetically. Humans use language, symbols, gestures, signs and physical and psychological tools to transform themselves and society. Vygotsky showed that children develop in two main ways, via social interactions with adults and through collective play with their peers. Complexity theory offers a complementary explanation of the social, cultural and technological discontinuities and patterns of emergence in cognition and intersubjective relations that are evident in human activity.

The literature review revealed a new pattern of childhood development, in which young people are now learning what it is to be human by interacting with smart socio-cognitive tools and their peers. Many students are bored by their teachers' use of traditional monological pedagogical methods that maintain strict social control at the expense of learning. Students are frustrated by a lack of access to ICT and do not understand why teachers rarely use computers in the classroom. One in six students leave school unable to read, write and count, ill equipped for a world of work that demands high levels of literacy, numeracy, interpersonal skills and computer literacy for even the most basic jobs. At the same time, there are growing shortfalls for jobs that require complex negotiation and complex thinking skills to create, implement and maintain critical systems and infrastructure.

The main conclusion of the study is that teachers and students are separated by two generations of tool use. This finding is consistent with Vygotsky and Luria's original but discredited hypothesis of a periodic pattern to human learning and development at both a local and global scale. The teachers employed a centralized control model of tool use in their teaching that has its origins in the Industrial Age (1700-1940) whereas the students were more attuned to a social interactionist model that is Knowledge Age (1990-) centric. The teachers were reluctant users of the tool in the classroom and quickly reverted to the lecture, closed questioning and individual activities as their preferred pedagogy. However, the teachers made frequent use of the tool for their own professional development and community meetings. The students were enthusiastic users of the tool and enjoyed the opportunity to use high level thinking processes, discuss topics and express their own opinions. Some senior students who used the tool to recall memorized information saw little difference between the traditional classroom and the team learning system activities. In the role of the

facilitator, the teachers' and students' first performances were a chaotic mix of four speech types; the ideal and minimalist set of facilitator instructions required to coordinate a group, inner speech to guide the sequencing of the motor activity, previously learned speech routines applicable to other contexts and authority speech to maintain control. The facilitators' performances improved when the speech and motor activities became synchronised with the participant performances and the facilitator's fear of failure subsided in a shift from right brain to left-brain control. The senior students who were able to facilitate sessions competently after their initial training, were not encouraged to use their new skills in the classroom. All groups, with one exception, reported they were more engaged, enjoyed what they were doing and lost track of time when they participated in the team learning activity, which was consistent with the flow experience (Csikszentmihalyi, 1975). The groups also reported they felt more aware of their surroundings and each other, which may be indicative of a change of state in the group, from a disorganized structure focused on the self to a more aligned structure focused on the group. Questions and contributed concepts acted as catalysts, which sparked more concepts. In some sessions, the students generated avalanches of concepts consistent with team formation. Closed questions generated few responses. Open-ended discussible and high-level questions stimulated the most ideas and the most complex ideas.

The research findings have practical implications for school learning. The study showed that a tool such as the team learning system can scaffold rich questioning, promote high-level thinking and support leadership capacity in students, so that novice facilitators are able to successfully lead a group in complex learning activities after a few hours practice. A new model of learning characterised as “contagious learning” which involves playing “language games”(Wittgenstein, 1999) is proposed. Learners learn how to create and facilitate their own learning experiences and use the autocatalytic aspects of conceptual sets to accelerate the creation, spread and adoption of epidemics of ideas.

New theory developed during the course of the study contributes to the field of social psychology by resolving several of the contradictions in activity theory (Davydov, 1999; Engestrom, 1999). The model focuses on the co-evolutionary relationship between the humans and tools, the automation of speech and motor routines and the ability of learners to deal with novelty and plan ahead. The new complexity-activity theory explains the differences between incremental and transformational change, clarifies the relationship between individual and collective activity, and provides a classification system for types of activity that links the worlds of the material and the ideal.

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