PRACTICES AND POTENTIAL OF ACTIVITY THEORY FOR EDUCATIONAL TECHNOLOGY RESEARCH
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1

목차

- **Introduction**
- **Basics of Activity Theory**
- **ANT(actor network theory)**
- **Practices and Potential of AT in ETR**
  - As a tool for an Historical Analysis of an Activity System
  - A Course Design Framework for Constructivist Learning Environments
  - As a tool for Discovering and Describing Reactions to Innovation
  - As a tool for Describing and Prescribing the Improvement Developmental Cycles
- **Conclusion and Discussion**

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Introduction

- 교육공학연구자: focusing on conducting rigorous and relevant mixed-methods studies to explain which technology applications work to facilitate learning , in what way, in which contexts, for whom and why.

  - Ross, Morrison, and Lowther(2010)

- Learning is highly dependent upon the activity of the learner,(Mihalca and Micllea 20

Basics of Activity Theory

- Vygotsky(1978)의 AT framework, mediated action +subject + object（motivation&action）+mediated artifact
- 제 2대 AT framework

Fig. 13.1 Second-generation activity system triangle (Engeström, 1987)
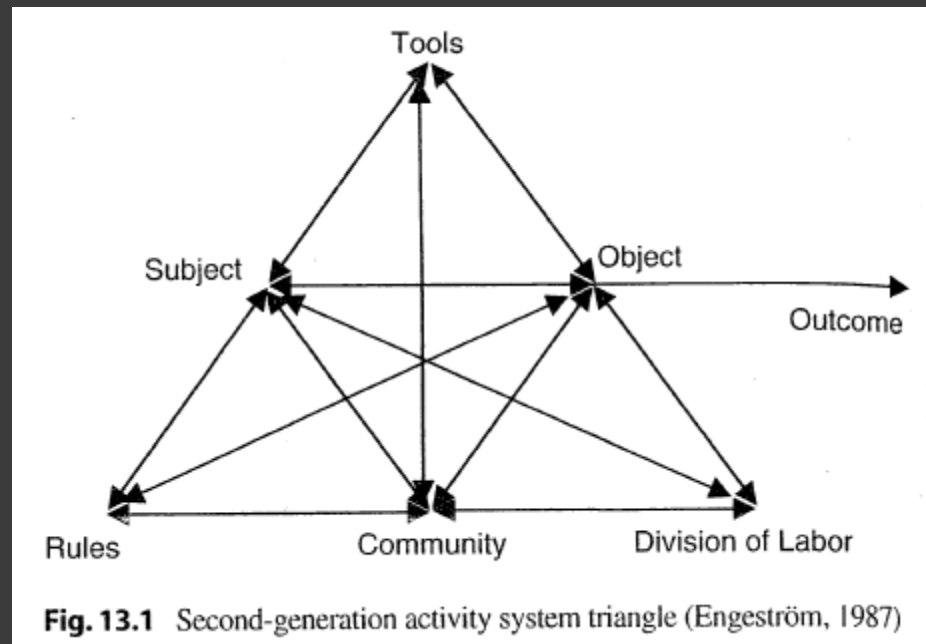
Basics of Activity Theory

- 5 principles
  - Unit of analysis,   the activity system
  - Multivoicedness of the activity
  - Historicity of the activity
  - Contradictions as the driving force of change in an activity
  - Expansive cycles as a possible form of transformation in an activity

ANT(actor network theory)

행위자-연결망 이론을 통해 그는 기존 사회과학/철학의 주관-객관(subject-object)이라는 이분법적 도식을 문제 삼고 모든 대상들을 여러 행위자(actor)들의 결합으로 이루어진 이질적인 연결망(heterogeneous network)으로 보길 제안한다. 자연-사회, 주관-객관이란 도식은 모두 이질적 연결망이 안정화됨에 따라 만들어진 결과이다. 그리고 번역의 관점에서 인간 행위자와 비인간 행위자가 모두 동등한 행위능력(agency)을 갖고 있다는 데 주목하여 이 둘을 대칭적으로 다룰 것을 주장한다.

⊛ Problematiaztion （subscribing and clarifying the actors）

⊛ Interessement(setting up and strengthening the links between the actores)

⊛ Enrollment(deveioping agreements between the actors)

⊛ Mobilization of the allies(optimizing the functionality of the network）(Callon, 1986)

Practices and Potential of AT in ETR

As a tool for an Historical Analysis of an Activity System

- ◉ Describe many learning context
- ◉ 예: 천문수업

tensions:

- building virtual models vs. learning astronomy

- teacher –centered instruction vs. student- centered learning

- ◉ Tensions are crucial elements in the transformation of AS

- Both Barab et al. (2002)and Yamagate-Lynch

A Course Design Framework for Constructivist Learning Environments

- ⊙ Six mail process
1. clarification of the purpose of the AS
2. analysis of the AS by identifying and describing its components
3. analysis of the activity structure(activities, actions and operations)
4. analysis of mediators
5. analysis of the context
6. analysis of the AS's dynamics

As a tool for Discovering and Describing Reactions to Innovation

- ⊙ ₐT has been used to discover how contradictions enable od frustrate change in the innovation setting   (Lim&Chai. 2004 etl)

- ⊙ 예 : ICT integration into curriculum in school
- - 1. they investigated the primary inner contradictions of each component
- - 2. focused on the contradictions among the components of the AS
- - 3. they compared different AS

As a tool for Describing and Prescribing the Improvement Developmental Cycles

- Engestrom(2001): the definition of AT to include the , expansive learning approach
- Learning might be associated with the developmental cycles of resolving a problem.
- 예 : 아동과 건강관리 시스템을 구축
- AT played a crucial role in understanding the history of the case and its contradictions, proposing a solution model and examining the new system.

Engestrom(2001)

Conclusion and Discussion

- AT is so flexible, it can be expanded and modified in response to the nature of the research context.
- The types of use of AT are summarized in table 13.1

Table 13.1 Different ways of using AT as a methodological tool

AT analysis steps	Contribution to ETR research	Specific studies using AT
Analysis of the activity systems of a school district and the teachers before, during, and after a technology integration and the availability of a technology coordinator to reveal tensions. Discovering the relationships between a series of activity systems	A potential framework for deriving practical implications in design-based research	Analysis of transformation of learning (Barab et al., 2002). Diffusion of innovation (Blin & Munro, 2008; Russell & Schneiderheinze, 2005). Redesign of teacher education program (Roth & Tobin, 2002). Technology integration process (Yamagata-Lynch, 2003, 2007)
Step-by-step analysis of an activity system to characterize the learning environment	Exemplary constructivist course design framework	Design of mobile computer supported environment (Zurita & Nussbaum, 2007; Uden, 2007). Design of learning artifacts (Mwanza & Engeström, 2005). Computer supported course design (Collis & Margaryan, 2004)
Characterizing the optimum context of the platform from designer and teacher perspectives. Using another theory for the community building process	Use of different theory(ies) interchangeably with AT to understand different phases of system development	Barab et al. (2004)
An analysis of the activity systems of a hierarchical structure, the internal contradictions in each system and the external contradictions between the different activity systems that are influencing each other	A method of analysis for diffusion of innovations	Diffusion of innovation (Lim & Hang, 2003; Lim et al., 2011). Comparison of different e-learning platforms (Benson, Lawler, & Whitworth, 2008; Benson & Whitworth, 2007)
The analysis of contradictions via four predetermined questions for each principle of AT, proposing new models for problem situations and examining and developing solutions	A potential framework for developmental research	Workplace knowledge management (Engeström, 2001). Educational innovations (Yamazumi, 2008). School–university partnership (Fenwick, 2009; Tsui & Law, 2007)

13

Thank You !