

Knowledge Creation Spiral in the Web-based Collaborative Learning Model

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Research Purposes

- n Most e-learning studies are centered around improvement in course materials
- n Little effort has been made to improve knowledge acquisition in an e-learning context.

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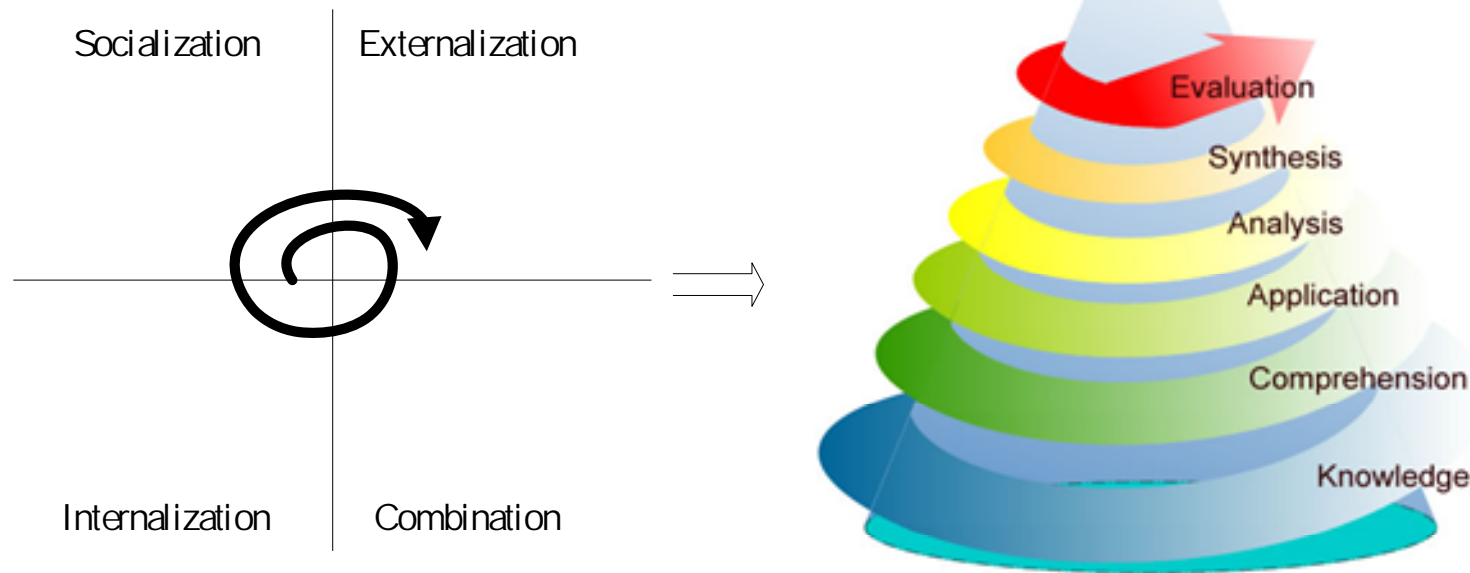


How to improve learning performance??

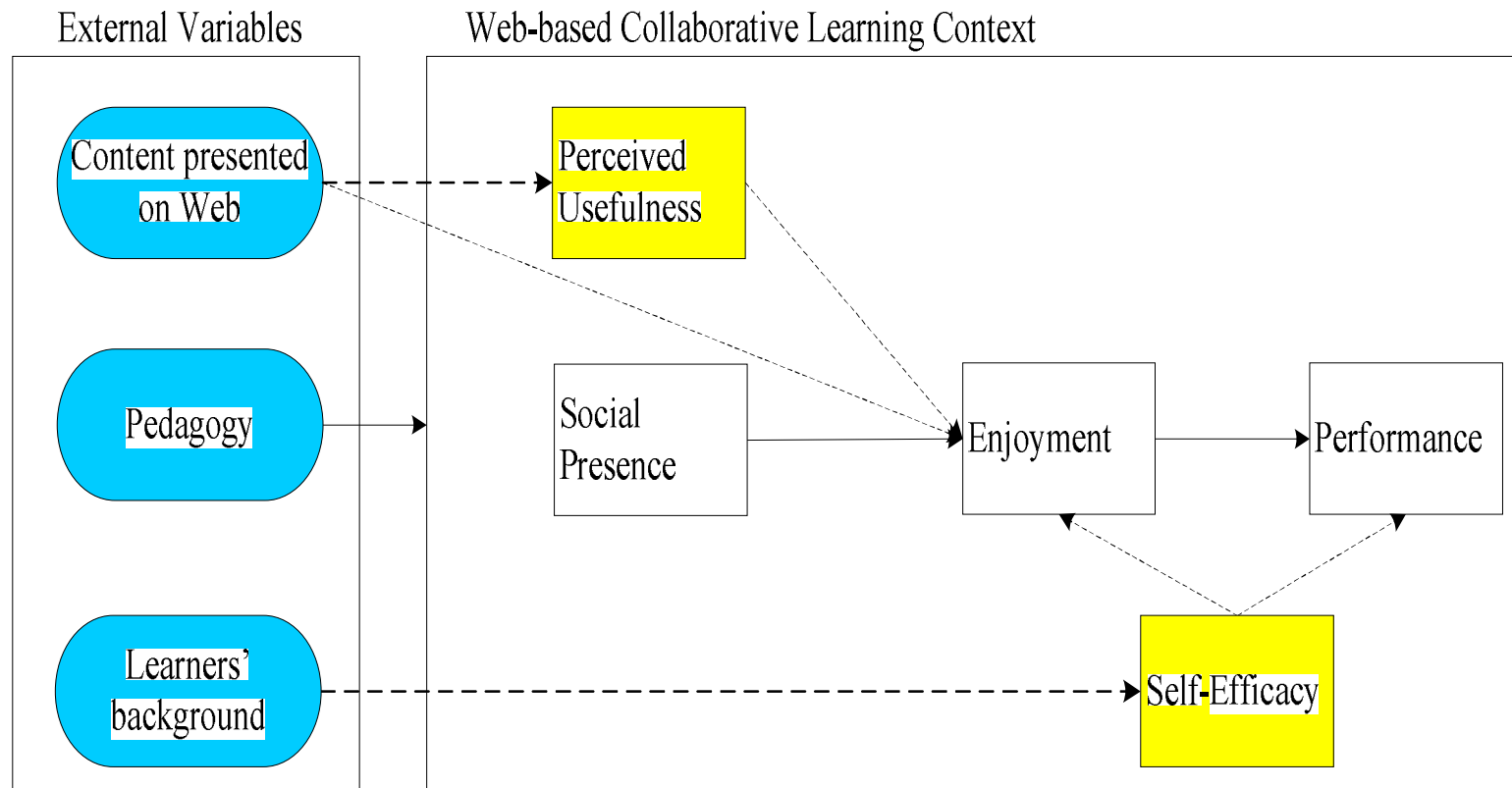
- n 'instructional' design

- n Learning community

Nonaka's Knowledge spiral and Bloom's taxonomy of knowledge



Web-based Collaborative Learning Model



Courseware development

- n The courseware was “Introduction to Software”.
- n Development tool : Macromedia Flash MX.
- n Using a role playing design
- n including gams: Connect the Dots, Guess Who, EYEZMAZE etc



(a) Guess Who



(b) EYEZMAZE

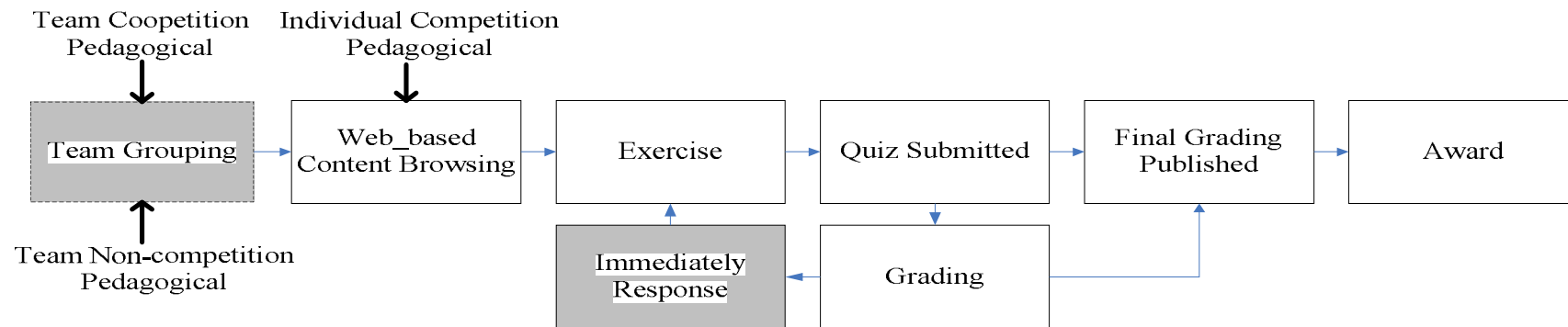


Pedagogic design of Learning Processes

Four Groups Design

Competition	OP	OO
Non-Competition	NN	CO
	Non-Cooperation	Cooperation

Enhancement Design on Collaboration and Competition





Questionnaire Design (5 scales)

- perceived usefulness
- self-efficacy
- social presence
- enjoyment
- subjective recognition
 - n active learning
 - n competence enhancement.



objective measurements

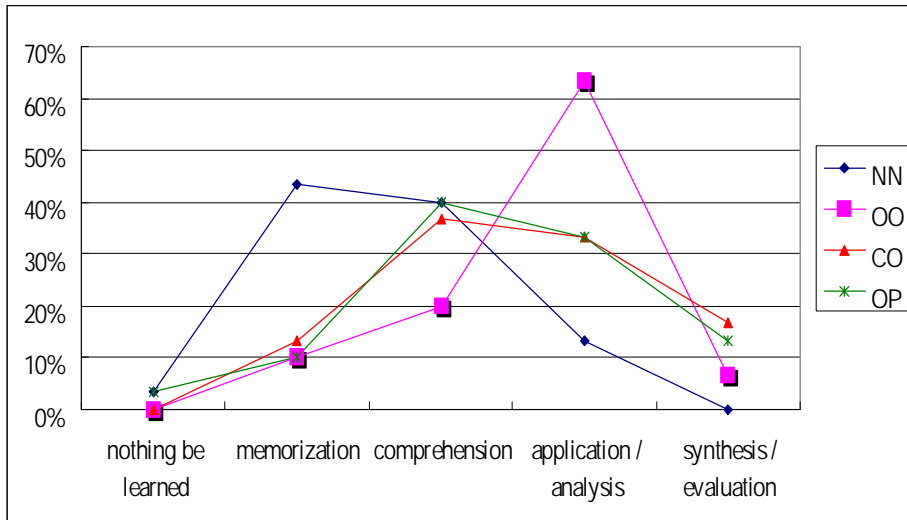
- n Content knowledge based on Bloom (1956)
- n Analysis skill
- n Synthesis skill
- n Organization skill



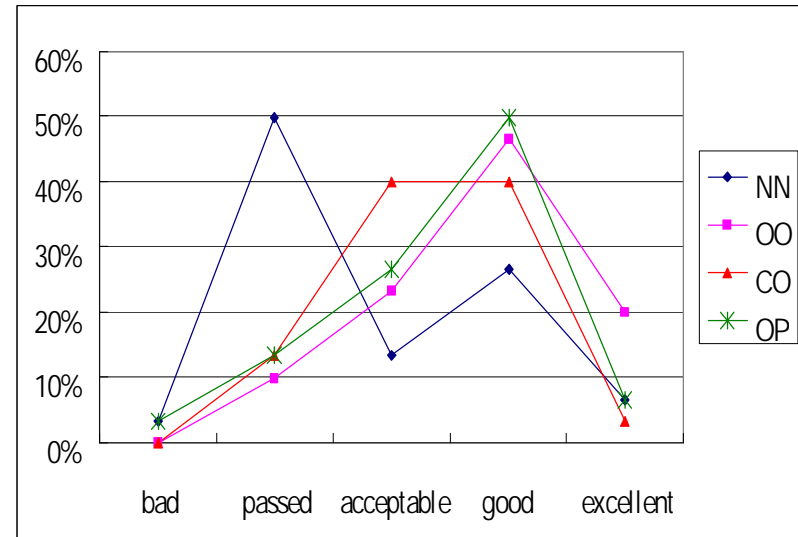
Sampling

n 221 participants

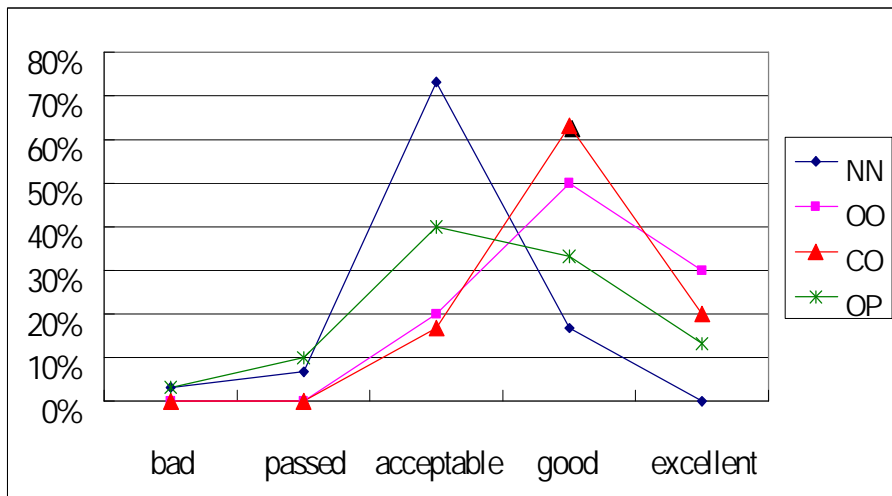
n 58% females 42 males



(a) Content knowledge level



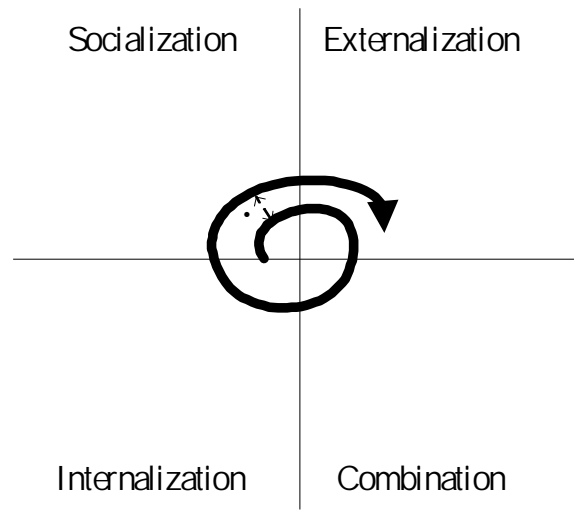
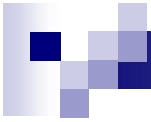
(b) Analysis



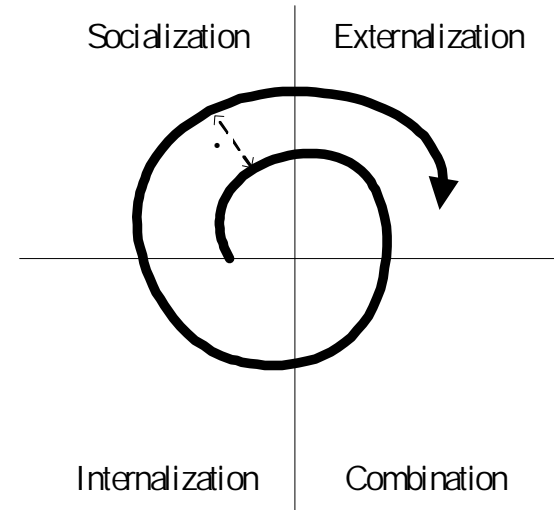
(c) Synthesis

No significant difference across the four groups is observed

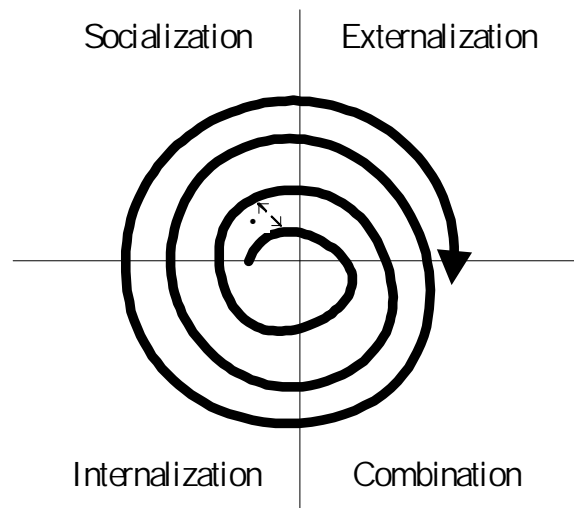
(d) Organization



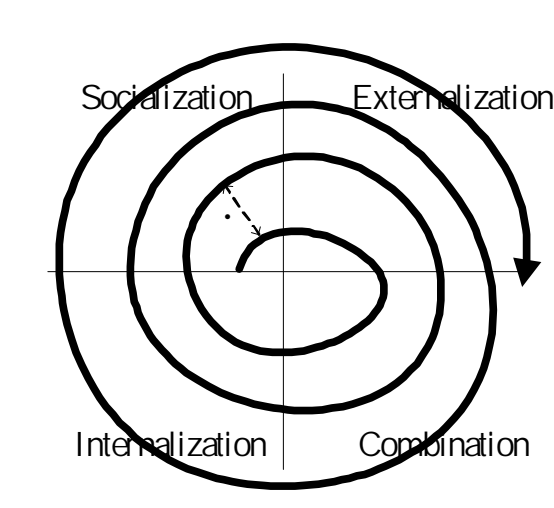
(a) Knowledge Spiral in the NN class



(b) Knowledge Spiral in the CO class



(c) Knowledge Spiral in the OP class




(d) Knowledge Spiral in the OO class



Conclusions

- n Collaborative learning generates larger amount of accumulated knowledge in its **socialization process**.
- n Competitive learning generates **more circular curves** in the spiral
- n Coopetitive groups reported the **best learning performance**
- n The findings show **social presence** is critical to not only enjoyment but also knowledge improvement



Thank you very
much for your
attention

Q&A