Use of collaborative concept mapping strategy in Korean writing classes

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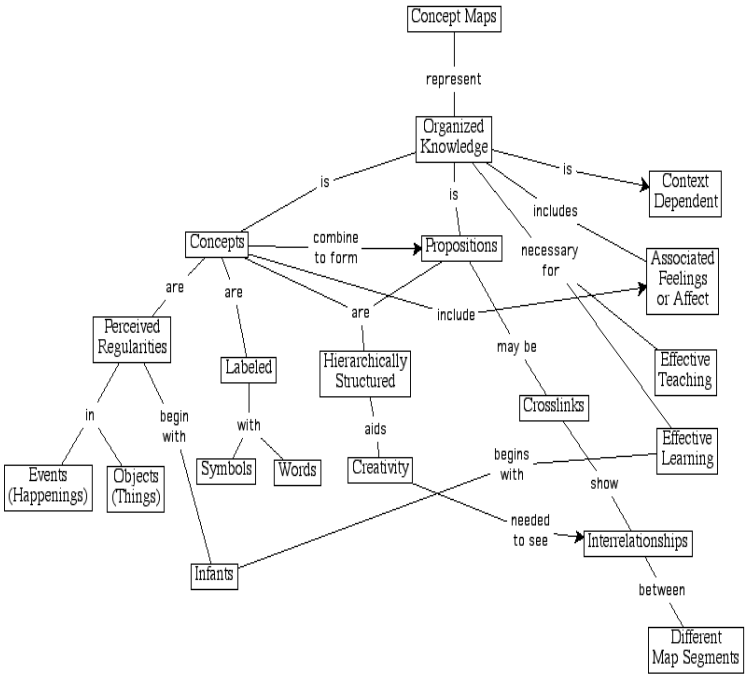
Research Goal

- The research aims at examining the use of concept mapping strategy in Korean language writing classes
- The concept mapping strategy is used to facilitate the second language learners' planning process for their writing.
- The collaborative concept mapping strategy is used to engage the Korean language learners in communicative and acculturative interaction.

What is Concept Map?

- A picture to represent one's understanding of certain knowledge.
- A concept map consists of ***nodes*** to describe key ideas or concepts and ***links*** to represent the relationships between and among the ideas or concepts.
- Concept mapping is intended to represent the learner's own knowledge structure constructed throughout the meaningful learning process (Novak, 1998).



Why we use Concept Map?

- Concept mapping could be used to enhance students' vocabulary building, and to make them analyze their own use of vocabulary through constructing a concept map.
- Concept maps could be used as a **visual thinking tool** for enhancing text comprehension and summarization (Anderson-Inman & Horney, 1996-97; Chang, Sung, & Chen, 2002; Hall & O'Donnell, 1996; Wiegmann, Dansereau, McCagg, Rewey, & Pitre, 1992).
- Concept maps could be used as a collaboration tool for **simulating communication** among students in foreign language learning (e.g., Freeman & Jessup, 2004; Sfard & Kieran, 2001). Collaborative construction of concept maps enables students to compare ideas with one another and reconstruct their own knowledge.

Pre-writing Strategy

- Concept mapping strategy may reduce the cognitive demands for the beginning foreign language writers since the structural format of concept maps activates spatial processing channels which enhance main idea concepts and aid the organization of ideas for recall (Dansereau, 1989).
- Good writers would plan more than poor writers do (Omaggio, 1986; Bourdin & Fayol, 2000). Studies of planning in writing (e.g., Carey, Flower, Hayes, Schriver, & Haas, 1989; Spivey, King, 1987) revealed that the quality and quantity of the writer's initial plans significantly correlate quality of text production.
- A previous study (Lin, 2003) shows that concept mapping is beneficial for generating ideas and the quality of concept map content is related to students' writing performance

Research Questions

- Is there difference between the writing scores in pretest and those in the individual concept mapping session?
- Is there a difference between the writing scores in pretest and those in the collaborative concept mapping session?
- Is there a difference between scores of the essays based on individual concept maps and those of the essays based on collaborative concept maps?
- Does the students language proficiency level influence the effect of concept mapping on writing scores?

Research Design

- Quasi-experimental design with repeated measure
- Subject : 75 undergraduates from intact Korean Language classes in a state university in the Northeastern United States

Group	Pretest	Treatment 1	Measure 1	Treatment 2	Measure 2
Novice (n= 34)	Essay writing without CM	CM training	Individual CM & essay writing	Collaborative CM	Essay writing with group CM
Intermediate (n= 18)	Essay writing without CM	CM training	Individual CM & essay writing	Collaborative CM	Essay writing with group CM
Advanced (n=23)	Essay writing without CM	CM training	Individual CM & essay writing	Collaborative CM	Essay writing with group CM

Concept Mapping Training

- Students are expected to come up with relevant expressions and words to the given scenario, then to discuss the structure of concept maps. It was assumed that collaborative interaction is influential for students' own vocabulary building.
- Students are engaged in a reflective process of the 'how' and 'why' of relationships among concepts (Kinchin, De-Leij, & Hay, 2005) as well as in brainstorming of ideas and formation of simple associations with related concepts. Students are expected to give each other feedback on the story lines and sentences they have prompted.
- The class activity aims to provide more enjoyable learning experience than in the lecture-based class. The concept mapping activity is designed to have students feel less concerned about making mistake.

Collaborative CM process

	Task	Instructional Goal	Required Skill	Outcomes
1	**Group Reading:** Having student take turns reading aloud the text in their groups	To develop students' understanding of the text	(a) Decoding (b) Comprehending (c) Peer communication	
2	**Brainstorming:** Making a list of key concepts including new vocabulary regarding the reading topic	To develop students' vocabulary, and to make them analyze their own use of vocabulary	(a) Reading skill (b) Comprehending (c) Vocabulary Retention	List of relevant vocabulary
3	**Finding Critical Relationships** between and among the concepts through group discussion	To develop students' collaboration for negotiating meaning	(a) Negotiating (b) Comprehending	Draft of concept map
4	**Collaborative Vocabulary Mapping** through the group negotiation on the topic	To help students to become more aware of the target language culture	(a) Negotiating meaning (b) Organizing sentences and expressions (c) Constructing structures	Elaborated group concept maps
5	**Individual Writing** based on the concept maps	To improve student's and writing skill	(a) Reflection on the CM (b) Writing	Individual essays

Instruments 1

Writing prompt (scenarios)

- The students were given writing problem scenarios and asked to create individual or group concept maps to solve the problem in Korean. Five scenarios were developed based on the content covered in the beginning and intermediated class textbooks:

  (a) Introduce new college life
  (b) How can you teach Steve about Korean table manners
  (c) Why you are studying Korean?
  (d) Plan a birthday party
  (f) Prove an adage, “what is most Korean is most global.”

Instruments 2

Composition Scoring Rubric

- Adapted from Jacobs, Zinkgraf, Wormuth, Hartfiel, and Hughey (1981)
- Five categories to assess the overall qualities of the student's compositions: Content (30), Organization (20), Vocabulary (20), Language Use (25), and Mechanic (5)
- Inter-rater reliability: Chronbach α = .966 (.955, .921, .940, .909, .896)
- The mean scores of those given by two raters were used in data analysis

Instruments 3

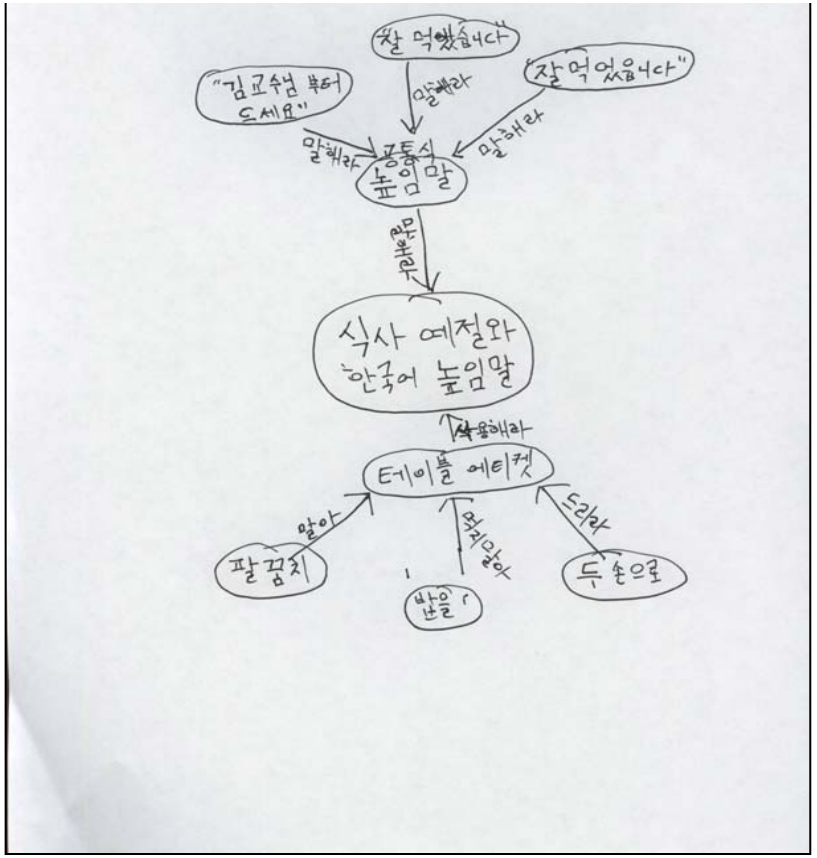
Concept Map Scoring Rubric

- Adapted from Novak & Gowin (1984)
- Assess the overall qualities of the student's concept maps:
  - Number of valid proposition
  - Number of valid hierarchy or structure
  - Number of valid cross link
  - Number of valid examples
- Inter-rater reliability: Chronbach α = .891

Data Analysis

- Repeated measures Analyses of variances (ANOVA) on the writing scores from three proficiency-level groups
- List-wise deletion of the missing data resulted in complete data being available from 63 participants

An example of a beginning-level student concept map on the second scenario: teaching Korean table manners



Result

Mean scores for five criterion categories (Time x Class)

Class	Time	Content	Organization	Vocabulary	Language Use	Mechanic	Total
1	**Pretest**	18.929	13.464	13.714	15.018	2.696	63.821
	Individual CM	20.911	15.107	14.339	16.536	3.375	70.268
	Collaborative CM	20.893	15.643	15.554	17.625	3.411	73.161
2	**Pretest**	21.667	15.833	16.233	16.900	2.900	73.533
	Individual CM	24.133	17.367	17.100	18.267	3.567	80.433
	Collaborative CM	23.533	17.367	17.067	19.367	3.700	81.033
3	**Pretest**	24.675	17.850	17.450	21.000	4.100	85.075
	Individual CM	26.500	18.650	18.400	22.050	4.600	90.200
	Collaborative CM	26.800	17.725	18.275	21.425	4.625	88.850

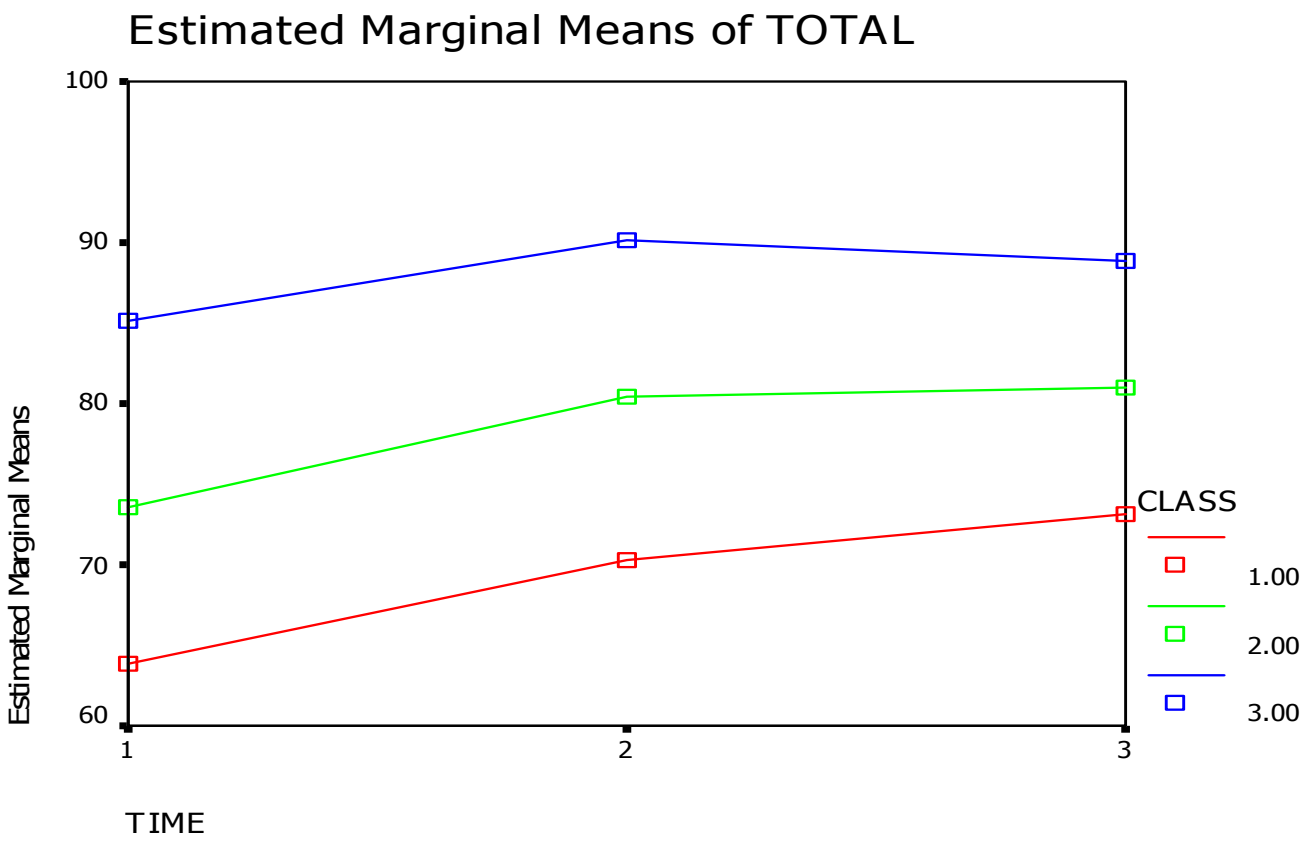
Result

- There was a significant within-subject effect for Time, F(2, 120) = 40.303, *p*=.000. That is, students' writing scores are significantly different over the treatment time (pre-test, individual concept mapping, and collaborative concept mapping)

Descriptive Statistics

	CLASS	Mean	Std. Deviation	N
PRETOTAL	1.00	63.8214	8.6861	28
	2.00	73.5333	5.5242	15
	3.00	85.0750	3.8535	20
	Total	72.8810	11.3769	63
INTOTAL	1.00	70.2679	10.1912	28
	2.00	80.4333	6.9046	15
	3.00	90.2000	3.4883	20
	Total	79.0159	11.6241	63
COTOTAL	1.00	73.1607	5.5144	28
	2.00	81.0333	5.1909	15
	3.00	88.8500	2.4176	20
	Total	80.0159	8.2320	63

Result



Profile plot (total score)

Result

- There was a significant difference between the writing scores in pretest and those in the individual concept mapping session
- There was a significant difference between the writing scores in pretest and those in the collaborative concept mapping session
- There was no significant difference between the writing scores in the individual concept mapping session and those in the collaborative concept mapping session

Pairwise Comparisons

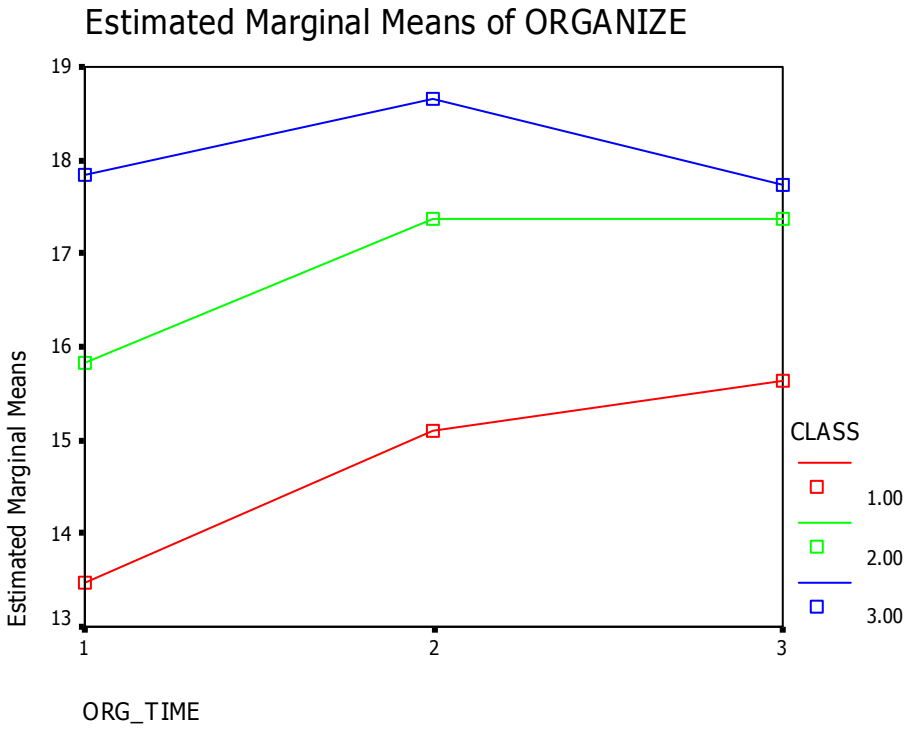
Measure: TOTAL

(I) TIME	(J) TIME	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-6.157*	.970	.000	-8.097	-4.218
	3	-6.871*	.662	.000	-8.196	-5.547
2	1	6.157*	.970	.000	4.218	8.097
	3	-.714	.864	.412	-2.443	1.014
3	1	6.871*	.662	.000	5.547	8.196
	2	.714	.864	.412	-1.014	2.443

Based on estimated marginal means

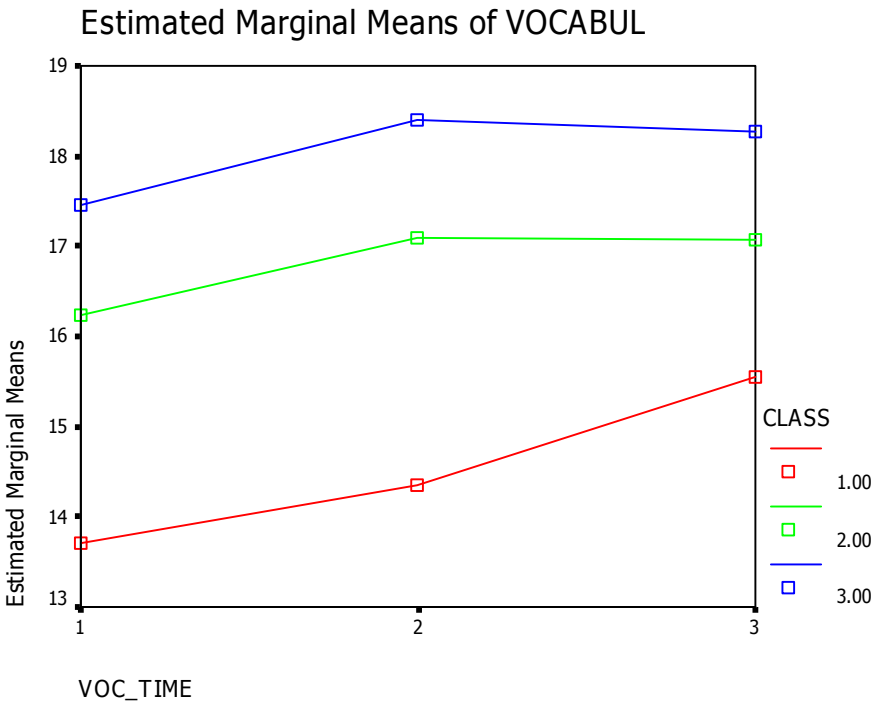
Result

- There was no significant interaction between time and class (within-subject effect), F (4, 120) =2.426, *p*=.052. That is, the students language proficiency level does not influence the effect of concept mapping on students' total gain scores.
- But, in Organization (F=6.584, *p*=.000), Language Use (F= 4.376, *p*=.002), Vocabulary (F=3.666, *p*=.007) score, there was significant interaction between time and class.

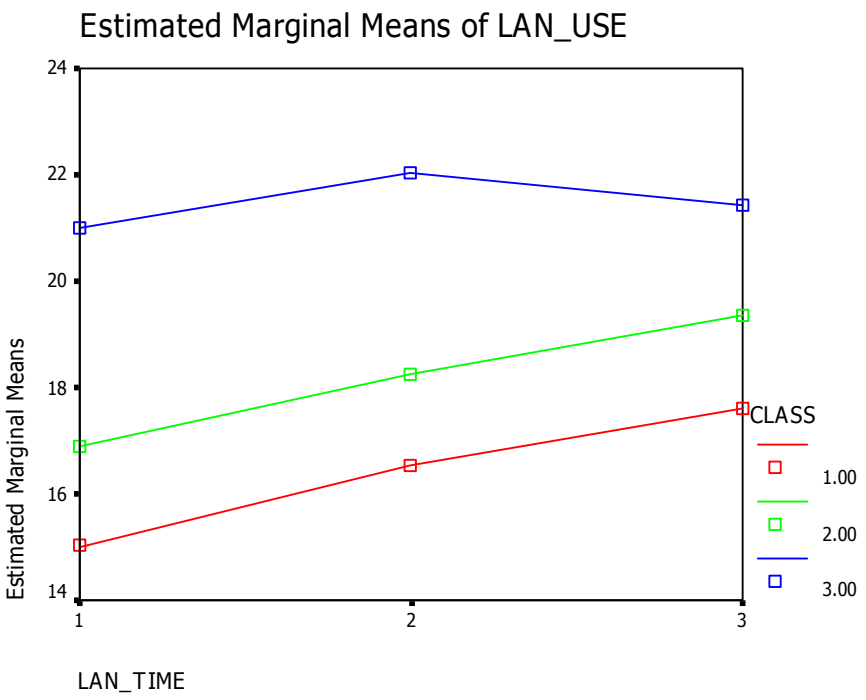


Profile Plot (Organization Score)

Result



Profile plot (Vocabulary score)



Profile plot (Language Use score)

Discussion

- The study confirmed that the concept mapping strategy was beneficial to improve students' Korean essay writing.
- Particularly, the concept mapping strategy was influential for the Organization, Language Use, and Vocabulary area in writing.
- Limitations of the study:

  1) Repeated measure design : the effect of concept mapping should be interpreted just only based on the pre-test base line

  2) Short duration of collaborative concept mapping training

For Future Study

- Control group quasi-experimental design
- Explore the relationship between concept map scores and essay writing scores
- Explore the interaction process during collaborative concept mapping
- Possibility of implementation of computer-based concept mapping tool for Korean language classes

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