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KAKENHI C：Research for development of programs to promote global-standard literacy　－time, body, and process－

The Effect of Writing Tools on Student Writing

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1．Introduction

1. According to our own experiences in college, student writing has gotten worse in quality over the last 20 years.

2. During those years, there have also been many significant inventions that changed the ways to write. Do they affect student writing negatively? An aim of this research is to how different writing tools effect on the quality of student writing.

【Hypothesis】

The quality of writing, or output changes according to what kind of tools they use to write handwriting, keyboard writing, flicker writing.

Different writing tools have different time, body, and process, which result in different output.

Write an about 600-word essay within 60 minutes making use of a writing tool given.

After 20 years from now, what are the skills that you will need to make your life successful and fulfilled? Give four of them and the reasons why you chose them.

Group A — Handwriting with a pen and paper

Group B — Keyboard writing with a computer

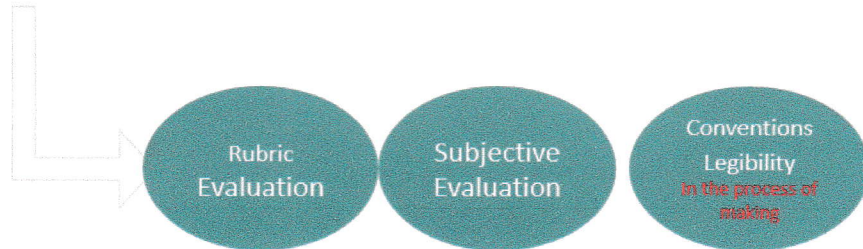**Group C** — Flicker writing with a smartphone

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Evaluate essays to define what has made them different in quality

| Rubric Evaluation | Subjective Evaluation | Conventions Legibility in the process of making |

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(1) Rubric Evaluation......Three evaluators (graduate students who are majoring in Japanese education. Teachers who are working at Nagasaki university elementary school.

	1	2	3	4	5
Focuses (four skills)	Focuses are not established	←between→	Based on the topic, establishes relevant focuses	←between→	Based on the topic, establishes relevant focuses, which are relevant to academic success.
Logical construct	Vague logical sequencing. Hard to follow	Be able to follow sequencing, but not clear enough	Almost clear	Clear logical sequencing. Demonstrates an natural flow of ideas between sentences.	Clear logical sequencing. Original ideas to facilitate readers' understand
Vividness of arguments	No arguments or interpretations	Need to infer arguments because of its vagueness	Clear arguments or interpretations	Demonstrates clear arguments or interpretations consistently	Demonstrates clear arguments or interpretations consistently and vividly
Adequate examples	No supportive examples	Despite inadequateness, provides supportive examples.	Provides supportive arguments	Provides adequate supportive arguments and makes arguments easy to understand	Provides adequate supportive arguments and makes arguments very easy to understand

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(2) Subjective Evaluation......Three evaluators (retired Japanese lang. teachers, Junior high school teachers at Nagasaki University Junior high school)

Logicality	D	C	B	A	AA
	Poor	Needs improvement	Average	Good	Excellent

Persuasive ness	D	C	B	A	AA
	Poor	Needs improvement	Average	Good	Excellent

4. Participants

	Group A	Group B	Group C
Freshmen	13	12	15
Sophomore	2	0	1
Junior	2	3	1
Senior	10	9	9
total	27	24	26

5. Results

5. Results

5-1. Rubric evaluation

5-2. Subjective evaluation

5-1. Rubric evaluation
Mean of each rubric item (SD in parenthesis)

Rubric items	Inter-rater correlation r (75)	Methods of describing		
		Hand-writing	Keyboard	Flicker
Logical construct	.212+	2.56 (0.75)	2.42 (0.65)	2.58 (0.69)
Vividness of arguments	.341*	3.07 (0.47)	2.77 (0.69)	3.17 (0.58)
Adequate examples	.317*	2.69 (0.71)	2.65 (0.60)	2.83 (0.60)

5-1. Rubric evaluation ANOVA

Results of 1-way between-participants ANOVA to each rubric item:

Logical construct: $F (2, 74) = 0.381$, $p = .684$
Vividness of arguments: $F (2, 74) = 3.178$, $p = .047*$
Adequate examples: $F (2, 74) = 0.564$, $p = .571$

Subsidiary analyses (post-hoc t-tests) for vividness of arguments:

Hand-writing vs. Keyboard: $t(49) = 1.84$, $p = .071+$
Keyboard vs. Flicker: $t(48) = -2.23$, $p = .030*$
Flicker vs. Hand-writing: $t(51) = 0.68$, $p = .500$

➜ Keyboard describing was worse than the other methods in respect of argument vividness. We have no idea of why...

5-2. Subjective evaluation
Mean of each item (SD in parenthesis)

Dummy variables: AA = 4, A = 3, B = 2, C = 1, D = 0

	Inter-rater correlation r (75)	Methods of describing		
		Hand-writing	Keyboard	Flicker
Persuasiveness	.253*	1.69 (0.50)	1.81 (0.44)	1.71 (0.49)
Logicality	.212+	1.46 (0.55)	1.63 (0.47)	1.46 (0.60)

5-2. Subjective evaluation ANOVA

Results of 1-way between-participants ANOVA to each subjective evaluation item:

Persuasiveness: $F (2, 74) = 0.489$, $p = .616$
Logicality: $F (2, 74) = 0.734$, $p = .483$

➜ We found no significant differences in any respect of subjective evaluation.

① Evaluated the quality of essays as output. Did this make the data analysis complexed?

② Conduct another subjective evaluation. Add "creativity" as a new evolution point of view. Have three new evaluators to grade the essays.

③ Conduct language-focused evaluation (Conventions, Legibility). Recruit new three evaluators

Future Issues

④ Explore relationships between writing tools and creativity.