A Pilot Study Examining the Motivational Effect of Instructional Materials on EFL Learning Motivation

A Pilot Study Examining the Motivational Effect of Instructional Materials on EFL Learning Motivation

北海道言語文化研究 北海道言語研究会
No. 10, 39-47, 2012.

A Pilot Study Examining the Motivational Effect of Instructional Materials on EFL Learning Motivation

Michael JOHNSON

Abstract： This paper sets out to conduct a preliminary investigation into the impact of different genres of instructional materials on English as a Foreign Language (EFL) learning motivation in Japanese engineering students. In order to measure the motivational impact of specific instructional materials the study trialed a questionnaire consisting of Keller's (1987a) Instructional Materials Motivation Survey (IMMS), and open-ended survey items. Several statistically significant differences were found in the IMMS items measuring the two types of materials. The findings were complimented and expanded upon by results of the open-ended items which indicated that the study participants were generally more motivated by English mathematics materials than general science-themed EFL reading materials. The reasons for such preferences included the self-efficacy engendered by the math materials, their increased cognitive and visual appeal, as well as the increased post-task satisfaction they provided. Overall, the data collection instrument proved effective in revealing motivational information about instructional materials, although particular scales would benefit from further refinement in order to improve their internal validity.

Key words：motivation, instructional materials, Instructional Materials Motivational Survey

1. Introduction

Within language learning motivation research, a number of important motivational variables have been identified as contributing to successful language learning and acquisition. One such area is classroom variables. In particular, factors related to instructors and instruction have been shown to have an important role in motivating and demotivaing language learners (Chambers, 1998; Falout & Maruyama, 2004; Gorham & Millette, 1997; Sakui & Gaeis, 1999). The need to more explicitly examine classroom L2 (second language) motivational factors emerged in the early 1990s as dissatisfaction grew with established social psychological approaches (Crookes & Schmidt, 1991; Skehan, 1990). These authors called for more focused attention on the motivational influence of specific classroom factors including curriculum and instructional materials. The shift toward more classroom- and learner-centered components of language learning motivation has seen these features taking on important roles in more comprehensive motivational models. One example is Dornyei's (1994) framework of L2 motivation, which integrates micro and macro factors of motivation into a three-tiered

framework consisting of a language level (consisting of integrative and instrumental subsystems), a learner level (consisting of learner needs and self-confidence), and a learning situation level (consisting of course-, teacher-, group-specific motivational components) (p.279-280). The course-specific motivational components concern the syllabus, teaching materials, teaching methods, and the learning task, and like Crookes and Schmidt (1991), Dornyei sees these classroom components as being comprised of four conditions: interest, relevance, expectancy and satisfaction.

These four conditions of classroom motivation have been adopted into L2 motivational research from educational and instructional design theory, specifically the work of Keller (1983, 1987b, 1987c). Keller's (1987c) ARCS Model of motivation describes students' motivation to learn in terms of four characteristics: attention (for arousing and sustaining curiosity and interest), relevance (strategies that link learners' needs, interests and motives), confidence (strategies that help students develop a positive expectation for successful achievement), and satisfaction (strategies that provide extrinsic and intrinsic reinforcement for effort) (Keller, 1987c; Small, 1997). Using this model as a base, Keller developed the Instructional Materials Motivational Survey (IMMS) (Keller, 1987a), a thirty-six item Likert scale survey measuring the attention, relevance, confidence and satisfaction components of instructional materials. Providing a systemic means for evaluating the variety of cognitive areas now targeted in language learning motivation research, it represents an ideal means for assessing instructional materials in the language learning classroom.

This paper's goal is to draw upon established motivational theory and methods in examining the effects of different genres of instructional materials on foreign language learning motivation. More specifically, it aims to measure the motivational influence of two different types of reading materials: general science-themed EFL reading materials, and problem-based English math readings. These materials will be examined in an experimental context with a cohort of Japanese engineering majors enrolled in a sophomore English reading course. The purpose of the class is to promote extensive and engaged reading through assigned and guided readings in a variety of themes. These two thematic areas were chosen for several reasons. First, as engineering majors it was thought that students might have an interest in science-related readings. Secondly, as these students generally like math, and are good at it, it was thought that the more logic oriented problem-solving readings might promote student engagement. Overall, the focus of this study was to ascertain insights into the types of reading materials preferred by this population of learners, and to better understand reasons for student preferences. In order to guide this inquiry the following two research questions have been created.

RQ1: Is there a difference in learners' motivational responses to general science-themed EFL reading materials and English problem-based math readings?

RQ2: What reasons do students attribute to preferences in different genres of reading materials?

2. Methods

2.1 Participants

Participants in this study consisted of 57 undergraduate engineering students at a national public university in northern Japan. All were second year students majoring in mechanical, systems, and civil engineering as well as applied chemistry. All students were enrolled in a mandatory intermediate English reading class, one of eight English classes required as undergraduate foreign language breadth requirements at the institution where this study took place.

2.2 Data Collection Instruments

Data was collected through a questionnaire consisting of two parts. The first section consisted of Keller's IMMS (1987a), a closed-item Likert style questionnaire consisting of four scales measuring major motivational variables related to instructional materials. The first scale, Confidence (CONF), consists of nine items measuring the degree to which students felt they could successfully accomplish the goals and tasks laid out in the materials. The second scale, Attention (ATT), is comprised of twelve items measuring the degree to which the materials initiated and sustained learner motivation. The third scale, Satisfaction (SAT), consists of six items measuring feelings of accomplishment and intrinsic appeal of the materials. The final scale, Relevance (RELE), is made up of nine items examining the materials' perceived value and utility to the learner. For each scale separate columns indicating degree of agreement along a five-point scale were provided under the headings Math Materials and Science Readings. Students were asked to provide responses for both sets of materials. The second section of the questionnaire consisted of open-ended items asking students about which genre of materials they preferred, and reasons for such preferences. Due to the exploratory nature of this study, and its goal to reveal the types of materials preferred by students, participants were also asked about the types of learning materials they generally preferred or disliked in their previous English learning educational experiences.

2.3 Data Collection and Analysis

The questionnaire was distributed to students at the end of the semester in the final session of their reading class. Students were provided with an explanation of the purpose of the study, and received instructions on how to fill out the questionnaire. Approximately 15 minutes was required to complete the questionnaire. Data from section one was input into PASW v.18 for descriptive and inferential analysis, while data collected from section two was coded and grouped thematically.

3. Results

3.1 IMMS Results

In order to assess the internal reliability of the questionnaire Cronbach's alpha was calculated on

each of the IMMS scales in Section 1. Three of the four scales demonstrated acceptable levels of internal reliability in relation to the number of items in each scale (ATT *a*=.73, SAT *a*=.68 , RELE *a*=.65). However, the scale CONF showed an unacceptably low alpha of *a*=.45. Due to the exploratory nature of this study, the data from this scale was retained for analysis, but it should be noted that in subsequent administrations of this instrument, particularly with the same or similar populations of learners, that this scale would need to be revised to improve its internal reliability.

In a general comparison of results across genres, the math materials were more highly endorsed across all scales (CONF m=3.64, ATT m=3.69, SAT m=3.78, and RELE m=3.77) than the science reading materials (CONF m=3.50, ATT m=3.52, SAT m=3.62, RELE m=3.60). Descriptive and inferential statistics for each item are summarized in Table 1. In terms of strength of endorsement, the top five items for the EFL science readings were CONF7 (m=4.21;sd=), RELE8 (4.17), CONF8 (m=4.07), ATT7 (m=3.98), and SAT4 (m=3.96), while the top five items from the math materials were SAT4 (m=4.26), CONF7 (m=4.25), RELE8 (m=4.21), ATT9 (m=4.19), and ATT8 (m=4.05).

In order to determine the statistical significance between items, a one-way analysis of variance (ANOVA) was conducted. The results showed statistically significant differences at the $p<.05$ level in four items. In all four items the statistical difference indicated a stronger endorsement of the math materials. The first item, CONF1 (p=.000), stating "When I looked at the materials I had the impression they would be easy for me", indicated the math materials engendered greater amount of initial confidence. The second item showing significant difference, ATT11 (p=0.009), is a negatively worded item (values were reversed) which states "The style of writing is boring", indicating that more students found math materials less boring (or more interesting). The third item of significance, SAT4 (p=0.004), stated "The feedback after the exercises, or other comments, made me feel rewarded for my efforts" which indicates greater post-task satisfaction with the math materials. Finally, SAT6 (p=0.010), which states "It was my pleasure to work on such well-designed lessons" indicated an overall greater feeling of satisfaction with the math materials.

3.2 Open-Ended Survey Question Results

In the second section of the questionnaire students were asked to respond to open-ended items. Students were first asked which genre of materials they preferred, and to provide reasons for such preferences. As indicated in Table 2, the math materials were preferred by 74 % of the

students. The most commonly cited reason for this preference was classified as the general "learning appeal" of the math materials. Learning appeal included how materials appealed to students learning preferences, promoted engagement, and agreed with students' learning styles.

Table 1: Item summary statistics and p-values

	science readings			math materials				
item	M	SD	Var	M	SD	Var	f	p
CONF1	2.75	1.07	1.15	3.51	1.07	1.14	14.74	.000*
CONF2	3.37	.85	.73	3.60	.77	.60	2.35	0.12
CONF3	3.42	1.03	1.07	3.47	1.02	1.03	0.07	0.792
CONF4	2.65	.89	.80	2.82	.98	.96	0.962	0.329
CONF5	3.77	.88	.78	3.86	.78	.62	0.344	0.559
CONF6	3.65	.83	.69	3.70	.90	.82	0.097	0.756
CONF7	4.21	.72	.52	4.25	.73	.54	0.089	0.766
CONF8	4.07	.99	.99	3.96	.90	.82	0.396	0.530
CONF9	3.61	.70	.49	3.65	.79	.62	0.084	0.773
ATT1	2.56	1.22	1.50	2.75	1.15	1.33	0.745	0.390
ATT2	3.63	.87	.77	3.74	.83	.69	0.485	0.487
ATT3	3.32	.92	.86	3.56	.90	.82	2.017	0.158
ATT4	3.81	.81	.65	3.93	.77	.60	0.669	0.415
ATT5	3.33	.85	.72	3.53	.98	.96	1.379	0.243
ATT6	3.54	.86	.75	3.53	.92	.86	0.004	0.952
ATT7	3.98	.76	.58	4	.70	.50	0.022	0.883
ATT8	3.95	.93	.87	4.05	.89	.80	0.350	0.555
ATT9	3.98	.87	.76	4.19	.63	.40	2.217	0.139
ATT10	3.47	.96	.93	3.67	1.04	1.08	1.158	0.284
ATT11	3.49	.73	.54	3.86	.76	.58	7.150	0.009*
ATT12	3.25	.93	.86	3.58	.92	.85	3.691	0.057
SAT1	3.35	.87	.76	3.37	.85	.73	0.015	0.901
SAT2	3.60	.94	.88	3.56	.96	.92	0.051	0.821
SAT3	3.70	.94	.89	3.79	.99	.99	0.252	0.617
SAT4	3.96	.90	.82	4.26	.64	.41	4.28	0.041*
SAT5	3.47	1.03	1.07	3.70	.96	.92	1.548	0.216
SAT6	3.70	.75	.57	4.05	.69	.47	6.841	0.010*
RELE1	3.12	1.08	1.18	3.35	1.04	1.08	1.365	0.245
RELE2	3.44	.80	.64	3.51	.80	.64	0.222	0.638
RELE3	3.61	.86	.74	3.86	.833	.69	2.538	0.114
RELE4	3.68	.86	.75	3.89	.67	.45	2.152	0.145
RELE5	3.81	.99	.98	3.56	.92	.85	1.985	0.162
RELE6	3.35	.93	.87	3.58	.92	.85	1.793	0.183
RELE7	3.72	.81	.67	3.93	.79	.63	1.998	0.160
RELE8	4.11	.74	.56	4.21	.70	.49	0.559	0.456
RELE9	3.79	.72	.52	4.04	.65	.42	3.261	0.074

* the mean difference is significant at the 0.05 level

Sample responses in this category include "I can visualize and solve the problems in English because its math" (S14) and "I enjoyed solving math problems in English, it's very interesting" (S48). The second most frequent category was "easy to understand", which describes learners'

perceived ease of comprehending material content. Interestingly, in some students their confidence in math seemed to carry over into their English studies, as student S32 expressed, "I can check my English comprehension by checking my calculations, it's good". The novelty of doing math problems in English also appealed to some students, as evident in these two sample responses: "I've never thought of learning English like this before, it was enjoyable" (S11) and "It was interesting, I hadn't done math in English before" (S39).

Table 2: Preferred reading materials and stated reasons for preference

math (n=43 / 74%)	science (n=15 / 25.8%)
learning appeal (12)	new and interesting (8)
easy to understand (6)	utility (4)
novelty (5)	like science (4)
utility (5)	learning appeal (2)
like math (5)	general interest (2)
material's visual/structural appeal (5)	

While only a quarter of the students preferred the science reading materials, the stated reasons for their preference were revealing. The most frequent response category was "new and interesting", meaning that the science content was not merely an English review of something they had learned previously, but rather introduced them to new science content knowledge. A sample response from S37 reflects this perspective, "I liked learning new things with the science materials, I liked learning about biology because I hadn't studied it before". Interestingly, in contrast a number of students (n=6) said that this was precisely why they did not like the science materials, as they felt uncomfortable studying something that they had yet to learn even in Japanese. This sentiment is reflected in a sample comment from S18, who wrote "I don't even know biology words in Japanese, let alone English". As the previous two examples indicate, the biology-themed materials appeared to promote conflicting reactions across participants. Other top categories describing reasons for science materials preference were "utility" and "like science". The general usefulness of science vocabulary was cited by several students, as S34 wrote, "I liked it and I think the vocabulary will be useful". A general interest in science also appeared to promote intrinsic appeal as the following two sample responses illustrate: "the science materials were really interesting, they had real meaning to me" (S28), and, "it makes me happy to study biology and science" (S6).

3.3 English learning materials preferences

To gain a broader indication of the types of English instructional materials preferred by this segment of learners, students were asked to describe the types of materials they preferred

using in the past, as well as those they disliked using. The results for these items are summarized in Table 3. Participants appeared to like materials that engendered confidence, promoted active mental engagement and problem-solving, as well as those containing visual aids and realia. Instructional materials including popular media and practical or academic content were also popular. There was a strong dislike for many of the materials traditionally seen in the Japanese EFL classroom, such materials focusing primarily on grammar, long readings, and vocabulary-based exercises. Several students explicitly stated they disliked materials requiring rote memorization or that were purely test-focused.

Table 3: Previously used EFL instructional materials: preferences and dislikes

preferred	disliked
easy to understand (8)	grammar (14)
puzzles, games (7)	long passages (11)
with pictures (4)	difficult (9)
TV shows/movies (4)	vocabulary (6)
songs (3)	no pictures (4)
academic (3)	rote memorization (4)
useful/practical (3)	focused only on tests (2)
interesting, enjoyable, variety (1 each)	speaking/listening (2)

4. Discussion

Motivation has been termed "…the process whereby goal-directed activity is instigated and sustained" (Pintrich and Schunk in Dornyei, 1998, p. 118). This definition provides a useful perspective from which the motivational implications of instructional materials can be examined. The significant difference in initial confidence revealed in the comparative results of CONF1 is important as motivation must first be initiated before it can be sustained. If students feel more confident when first engaging a particular set of materials this provides them with a positive motivational foundation for subsequent learning tasks. Another important factor contributing to initiating motivation was the novelty factor of doing math problems in English. Students appeared to enjoy the challenge of applying their math skills in a foreign language, particularly as it was something that they had never considered before.

Regarding characteristics of materials that contribute to sustaining motivation, the open-ended items in this study indicated that instructional materials that promote self-efficacy appear to promote ongoing motivation in learners, while overly difficult materials appear to be demotivating. The level of the math materials, and the fact that students could call upon their developed math abilities to conceptualize content and confirm English comprehension, resulted in a preference for this type of materials. Additionally, the results of ATT11 and SAT6 indicated

that the math materials were perceived to be more interesting (less boring), and more satisfying in design to participants. These preferences reflected data from the open-ended items where students stated that they generally liked materials that engaged them visually and mentally, particularly those containing games and logic, as well as those supported by visual aids and media. This preference for a variety of engaging materials provides some explanations as to why students voiced a dislike for redundant or monotonous grammar and vocabulary-focused materials encountered in the past.

The results of SAT4 indicated that the math materials provided students with greater post-task satisfaction. This type of satisfaction contributes to ongoing motivation, or the feeling that students want to continue learning English. The role of a feedback function within instructional materials appears important in this regard. The math materials, due to their problem-based structure, appear to have promoted a satisfying feeling of accomplishment in learners, as by solving problems participants confirmed both their comprehension of the English content, and their ability to solve math problems. Students' preference for materials with utility value presents another important motivational feature for English instructional materials. Materials that provide utility value to learners, something worthwhile they can take away from the learning experience, serve to contribute a greater sense of satisfaction in learners. This evaluative function is an important part of Doryei and Otto's (1998) conception of motivation, and while being essential to ongoing motivation, it additionally feeds back into initiating and sustaining motivation as the learner evaluates the value of initially engaging, then continuing through, a particular set of instructional materials.

5. Conclusion

The goal of this study was to examine students' motivational response to two different genres of instructional materials. The data collected indicated that learners preferred the English math materials to the general EFL science-themed readings used in this study. Participants found the math materials to promote greater confidence, to be more engaging, and ultimately more satisfying. Due to the preliminary nature of this study, the findings discussed above require further corroborative inquiry. Further, the instrument used above, particularly the IMMS CONF scale, would require refining if used again with this population of learners. Despite these limitations, the tentative findings presented here represent a starting point for investigating the motivational impact of instructional materials on foreign language learners.

REFERENCES

Chambers, G. N. (1998). Pupils' perceptions of the foreign language learning experience. *Language Learning Research, 2*(3), 231-259.

Crookes, G., & Schmidt, R. W. (1991). Motivation: Reopening the research agenda. *Language Learning, 41*,

469-512.

Dornyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal, 78*(No.3), 273-284.

Dornyei, Z. (1998). Motivation in second and foreign language learning. *Language Teaching, 31*, 117-135.

Dornyei, Z., & Otto, I. (1998). Motivation in action: A process model of L2 motivation. *Working Papers in Applied Linguistics, 4*, 43-69.

Falout, J., & Maruyama, M. (2004). A comparative study of proficiency and learner demotivation. *The Language Teacher, 28*(8), 3-9.

Gorham, J., & Millette, D. M. (1997). A comparative analysis of teacher and student perceptions of sources of motivation and demotivation in college classes. *Communication Education, 46*, 245-261.

Keller, J. M. (1983). Motivational design of instruction. In C. M. Reigeluth (Ed.), *Instructional design theories and models: An overview of their current status*. Hillsdale, NJ: Erlbaum.

Keller, J. M. (1987a). *IMMS: Instructional materials motivation survey*: Florida State University.

Keller, J. M. (1987b). Strategies for stimulating the motivation to learn *Performance & Instruction, 26*(8), 1-7.

Keller, J. M. (1987c). The systematic process of motivational design. *Performance & Instruction, 26*(9), 1-8.

Sakui, K., & Gaeis, S. J. (1999). Investigating Japanese learners' beliefs about language learning. *System, 27*, 473-492.

Skehan, P. (1990). Individual differences in second language learning. *Studies in Second Language Acquisition, 13*, 275-298.

Small, R. V. (1997). Motivation in instructional design. *ERIC Digests*, July (ED409895).

Author's Information:
Name: Michael Johnson
Faculty, Muroran Institute of Technology
Email: migjohns@mmm.muroran-it.ac.jp