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ABSTRACT

The purpose of this study was to investigate viewers' knowledge of program content under various television translation modes and viewing experiences. Subjects were 176 students from the Center for Matriculation Program, Universiti Sains Malaysia in Penang, Malaysia. The Spanish version of an instructional television program was used; the program was translated into Malay using dubbing and subtitling. Subjects were randomly assigned into 4 groups of 44 subjects each. The study examined differences in viewers' knowledge of content in programs with and without translation, and for the translated program, differences in content knowledge among viewers who watched the programs under single viewing and repeated viewing conditions. Findings indicated the following: (1) students who viewed the program without translation had significantly lower scores on a multiple-choice test compared to those who viewed the same program in translations, both under single and repeated viewing conditions; (2) under single viewings of translated instructional television, translation modes did not contribute to any differences in knowledge of program content, however, under repeated viewings, translation in dubbing and subtitles without sound helped viewers to acquire more knowledge on content than translation in subtitles with sound; (3) repeated viewings appeared to significantly help viewers to acquire more knowledge on program content than single viewings, however, effects of repeated viewings were not consistent in all translation modes; and (4) interactions between translation modes and viewing experiences were statistically significant. (Contains 27 references.) (AEF)

The Effects Of Dubbing Versus Subtitling Of Television Program

by Fattawi B. Mokhtar

Abstract

The knowledge of program content among viewers who watched an instructional television program translated into several translation modes and under different viewing fashions was investigated. One hundred seventy six college students were randomly selected and randomly assigned into eight experimental groups. A 4 x 2 factorial design was employed. The dependent variable was the viewers' scores on multiple-choice comprehension test questions on the program content administered immediately after treatments. Several significant differences among variables were found and discussed.

Introduction

When language becomes a barrier to communication, the classic alternative solution to this problem is translation. There are two modes of translating television programs. First is a translation process known as "dubbing." With this method, every spoken word, including voice-over narration as usually employed in instructional programs, is translated into the target language.

The second mode of translation is a process known as "subtitling." With this method, spoken words, either in dialogues, monologues (on-camera voices) or voice-over narrations, are translated and presented in the form of text superimposed on the visual, typically at the bottom part of the screen. Hence, with this method the dominant meaningful symbols are presented in visual form while the non-meaningful spoken words remain as auditory symbols.

In many non-English speaking countries, translated broadcast materials, either for entertainment or instructional purposes, constitute a great if not dominant portion of the overall number of mediated resources in those particular countries. Translation of imported programs is a viable effort to overcome the problem of high cost versus limited audience for local production (Kilborn 1989).

Statement of the Problem

Translation by dubbing or subtitling seems to impose several new characteristics on the product of this process. There are several questions related to these characteristics which need to be addressed, particularly from the communication process point of view. When a program is translated in subtitles, it automatically changes the conveyance of information from auditory dominance to visual dominance (d'Ydewalle et al. 1991). With translation by dubbing, the translation maintains the original method of communication used by television.

With translation in subtitles and in dubbing then, the television medium tends to communicate in two different fashions: with visual dominance in the former and auditory dominance in the latter. Whether these differences affect viewers' comprehension of the program content is unknown at this point.

Technically, translation by subtitles will preserve all audio signals in the original soundtrack (including music, sound effects, and spoken words) exactly as in the original production. Aesthetically, this is one of the major advantages of subtitles over dubbing (Voge 1977). However, when considering the communication process, the spoken words (in the original language) are turned into non-meaningful symbols. The role of these symbols during viewing is not yet understood.

If Schram's Communication Model is used as a theoretical ground, those non-meaningful spoken words will be categorized as "noise," which according to the model will impede the communication process (Schram 1954 in Heinich et al. 1989). An investigation involving retention and elimination of the soundtrack in subtitled television might answer this question.

Another form of written text on television is the "caption." Captions and subtitles are identical in physical format and in the way they are presented on the

screen. They are different, though, in the sense that captions use the same language as the soundtrack, whereas subtitles are presented in a different language. Several studies on the effects of captioned television on learning among hearing-impaired and normal-hearing viewers indicate that captioned television improves learning significantly (Neuman 1991, Markham 1989, Koskinen 1988, Bean 1989). Whether subtitled television affects comprehension and learning as consistently as captioned television is unknown at this point.

Purpose of the Study

The purpose of this study was to investigate viewers' knowledge of program content under various television translation modes and viewing experiences. The researcher was interested in investigating whether there were any differences in the knowledge of program content among viewers who watched an instructional television program that was translated in several translation modes and variations, those who watched the program translated, and those who saw the same program without translation.

The researcher was also interested to investigate whether there were any differences in the knowledge of program content among viewers who watched those translated and not translated programs under single viewing condition to those who saw the same, but under repeated viewing condition.

Research Hypotheses

This study advanced the following hypotheses:

Hypothesis 1.There is a significant difference in the knowledge of program content between viewers who viewed an instructional television program with translation and those who saw the same program without translation.

Hypothesis 2. There is a significant difference in the knowledge of program content among viewers who viewed an instructional television program with different treatments of translation by dubbing or subtitling.

Hypothesis 3. There is a significant difference in the knowledge of program content between viewers who viewed a television program in a single viewing experience and those who viewed the same program in a repeated viewing experience.

Hypothesis 4. There are significant interactions between modes of translation (dubbing or subtitles) in an instructional television program and viewing experiences.

Methods

Research Design

A 4 x 2 factorial design with random selection and random assignment was employed in this study (Keppel 1991). Translation modes were the first independent variable (Factor A), with four levels: dubbing (a1); subtitles with sound (a2); subtitles without sound (a3); and without translation (a4).

The second independent variable (Factor B) was the viewing experience with two levels: single viewing (b1) and repeated viewing (b2).

The dependent variable was the viewers' scores on multiple-choice comprehension test questions on the program content. This test was administered immediately after treatments. Each mean cell and the main effects were compared to test the hypotheses. When there was significant difference, post hoc tests were conducted to pinpoint where the difference was.

Subjects

One hundred seventy six students from the Center for Matriculation Program, Universiti Sains Malaysia in Penang, Malaysia, were selected as the subjects in this study. They were randomly selected and randomly assigned into eight experimental groups. Each group consisted of twenty-two subjects.

Because of the nature of selection criteria to enroll in this program and the rigidness of the program itself, matriculation students are highly homogenous in terms of their academic backgrounds and age levels.

Instrumentation

Discussions on instrumentation are presented in two sections. The first section

is on the materials, in this case the translated instructional television programs where the independent variables were manipulated. The second section is on the comprehension test questions in which the dependent variable was measured.

The materials

The Spanish version of an instructional television program entitled Cardio Pulmonary Resuscitation (CPR) For Bystanders (revised), produced by Pyramid Film and Video (1992) was chosen for this study. The English version of the program was not chosen because English is the second language in Malaysia. Narrations and other on-camera voices in the original soundtrack might to a certain degree have been understood by the viewers. Hence, this effect was a potentially confounding variable for the subtitled version of the instrument. Besides language, the choice was also based on the following criteria:

i) The length of the program was not more than 30 minutes.

ii) The program content was something of which the researcher believes the subjects have some basic entry-level knowledge, but no knowledge in detail.

iii) The program was produced in a typical documentary fashion where verbal modalities such as voice-over narrations and on-camera voices dominate the conveyance of the messages.

iv) The overall program content was something believed to be meaningful or at least stimulating to a subject's interest.

v) Subjects in this study were within the scope of the intended audience specified in the program.

Upon receipt of permission of the copyright owner, the program was duplicated and translated into Malay using two modes of translation, dubbing and subtitling. The translation was based on the original soundtrack in English.

For the program translated in dubbing, the voice-over was narrated by a semi-professional narrator. On-camera voices were spoken by amateur actors and actresses. Original sound effects and music were reused whenever possible.

For the program translated in subtitles, a character generator machine was used. The lettering was Futura regular in 36 point size. Kemp et al. (1985) notes that for recognized legibility standards for ease of reading, the letter size should be at least one twenty-fifth the height of the screen. On a 23-inch television monitor with 15 inches of screen height, 36 point Futura satisfied this requirement. The lettering was in white and bordered in black. A maximum of 2 lines with 2 inches of margins on each side and a minumum of 2 inches of bottom space were uniformly employed.

The exact translation used in the dubbing was used in subtitles. The text was not summarized as is usually done in the subtitling of feature programs.

To see the placebo effects, the original version in Spanish without translation was used. For the subtitles without sound condition variable, the same subtitled version was used, but played in mute.

All versions of the program, including the original without translation, were recorded on half-inch Sony high-grade VHS tape in PAL color system.

The comprehension test questions

All questions were developed by the researcher based on the program content conveyed through both channels (audio and video) as a whole. To ensure content validity and precise wordings on the questions, the printed CPR procedures written by the American National Red Cross (1978), Feldman et al. (1975) and Seymour (1981) were reviewed. After a series of pilot test, the final version of the 35 comprehension questions was translated into the Malay language. The reliability of the comprehension questions was determined to be .79 by the Cronbach Alpha technique computed by SPSS-X program.

Experimental Procedures

All viewings were carried out in the projection room. The 60-person capacity room has semi-permanent seats and was equipped with two 23-inch television monitors, a VCR, and several other facilities for projection. The acoustic and ambient light controls of the room were

adequate. The temperature was controlled by means of three window-type air conditioning systems.

For the purpose of this study, only 44 seats were allocated. Two 23-inch television monitors were set up to ensure that all viewers were seated no further than the maximum distance suggested. Heinich et al. suggested that one 23-inch television monitor should serve no more than thirty students (Heinich et al. 1989). Hence, for 44 viewers, two 23-inch monitors were more than generous. The seating distance and the angle of viewing were also set in accordance to Heinich's suggestions.

The experiment sessions were held on four consecutive evenings. All seats were numbered from 1 to 44. All set-ups were readied at least thirty minutes before sessions were to begin.

Experiment Implementation

Randomly chosen subjects were ramdomly assigned into 4 groups of 44 subjects each. Minutes before the session was to begin on the day of the experiment a representative of the group in that particular session drew to determine on which version of the program the group would be tested. Immediately after viewing, the comprehension test was administered to all subjects in the group. The subjects were instructed to answer by circling the correct responses on the question paper itself. They were given 30 minutes to complete the test. At the end of the 30 minutes, all subjects were asked to stop. One representative of the group drew to determine whether subjects seated in odd numbered or even numbered chairs would stay for a repeated viewing. Students seated in unselected numbers were asked to hand in their comprehension test answers and leave the room.

The remaining subjects would be in a repeated viewing condition. A brief explanation was given on this viewing condition. They were requested not to change their seats. The program was then shown for the second viewing. The subjects were told that they could answer the questions while in the second viewing if they wished. Upon completion of the second viewing, the subjects were given another 10 minutes to complete the test. The exact same procedures were repeated in every session. In the subtitles without sound condition, the same subtitled version of the program was used, but shown in mute. All sessions were conducted by the researcher himself without any assistance.

Results

Data were analyzed using Two-Way Analysis of Variance (ANOVA), One-Way Analysis of Variance (ANOVA) and t-Tests to test the hypotheses. The alpha level was set at .05. When there was significant difference between the means, Tukey test procedures were conducted to pinpoint where the difference was.

Single Viewing

The descriptive statistics in Figure 1 revealed that under the single viewing experience condition, students who viewed the program without translation had the lowest score (Mean = 16.45, SD = 3.5). Analysis of variance (ANOVA) tests and statistical tests using Tukey test procedures indicated that this treatment was significantly different than the other three treatments at $p = .000$ level (ANOVA) and $p < .05$ level (Tukey).

Figure 1
DESCRIPTIVE STATISTICS FOR TRANSLATION MODES AND VIEWING EXPERIENCE

VIEWING EXP.		TRANSLATION MODES: Dubbing	Subtitle +Sound	Subtitle - Sound	No Trans
Single	Mean	22.36	21.23	22.50	16.45
	SD	3.1	3.2	3.0	3.5
	n	22	22	22	22
Rep.	Mean	29.68	25.77	27.91	18.55
	SD	1.6	2.4	1.9	3.1
	n	22	22	22	22
TOT.	Mean	26.02	23.50	25.20	17.50
	SD	4.4	3.6	3.7	3.4
	n	44	44	44	44

The students in subtitles without sound treatment had the highest mean score (Mean = 22.50, SD = 3.0). Statistical tests however, indicated that there were no significant differences between this treatment, the dubbing treatment (Mean = 22.36, SD 3.1), and subtitles with sound treatment (Mean = 21.36, SD = 3.2) at p <.05 level. Pairs of treatments which significantly differed under single viewing conditions are shown in Figure 2.

Figure 2
PAIRS OF MEANS UNDER SINGLE VIEWING WHICH ARE SIGNIFICANTLY DIFFERENT

	Dub.	Subtitle + Sound	Subtitle - Sound	No Trans.
Dub.		*		
Subtitle + Sound			*	
Subtitle - Sound				*

* p < .05

SD = 1.9) was not significantly different than dubbing treatment (Mean = 29.68, SD = 1.6).Pairs of treatments under repeated viewing conditions which significantly differed from each other are shown in Figure 3. Data analysis using Two-Way Analysis of Variance (ANOVA) indicated that interaction between translation and viewing was significant at p = .000 level. Further examination of the cell means revealed that the mean score of

Figure 3
PAIRS OF MEANS UNDER REPEATED VIEWING WHICH ARE SIGNIFICANTLY DIFFERENT

	Dub.	Subtitle + Sound	Subtitle - Sound	No Trans.
Dub.		*		*
Subtitle + Sound				*
Subtitle - Sound		*		*

* p < .05

Repeated Viewing

In the repeated viewing condition, students viewing the without translation treatment again had the lowest mean score (Mean = 18.55, SD = 3.1). Dubbing treatment (Mean = 29.68, SD = 1.6) appeared to be the best of the three translation modes. Statistical tests using Tukey test procedures indicated that under this viewing condition, without translation treatment was significantly different than all other treatments. Subtitles with sound treatment (Mean = 25.77, SD = 2.4) was significantly different than subtitles without sound treatment (Mean = 27.91, SD = 1.9) . Also significantly different from subtitles with sound treatment was dubbing treatment (Mean = 29.68, SD = 1.6). Surprisingly, however, subtitles without sound treatment (Mean = 27.91, translation modes treatment under single viewing conditions changed inconsistently under repeated viewing conditions. This appeared to indicate that an interaction between translation modes and viewing experiences was truly present.

Tests of Hypotheses

All hypotheses were tested using Two-Way Analysis of Variance (ANOVA), One-Way Analysis of Variance (ANOVA), and t-Tests. The alpha level was set at p < .05. When there was significant difference between the means, the Tukey test procedure was used to pinpoint where the difference was.

Hypothesis 4. There are significant interactions between modes of translation in instructional television programs and viewing experiences. H4 was tested first

because the outcome of the hypotheses on interaction will have a strong implication on the testing procedure of the other hypotheses (Keppel 1991). Analysis of Variance (ANOVA) revealed that the interaction between translation and viewing was significant $F(3, 168) = 6.429$, $p = .000$. H4 therefore was accepted.

Hypothesis 1. There is a significant difference in the knowledge of program content between students who viewed an instructional television program with any modes or variations of translation compared to students who viewed the same program without translation.

Figure 4
ANALYSIS OF VARIANCE
SUMMARY TABLE

Source	SS	DF	MS	F	Sig. F
Translation (T)	1957.295	3	652.432	81.08	.000*
Viewing (V)	1031.114	1	1031.114	128.144	.000*
T x V Interac.	152.205	3	51.735	6.429	.000*
Explained	3134.614	7	449.088	55.811	
Residual	1351.818	168	8.047		
Total	4495.432	175	25.688		

*p < .05

Analysis of variance (ANOVA) revealed that the translation's main effect was significant $F(3, 168) = 81.082$, $p = .000$. However, because the interaction between translation modes and viewing experiences (H4) was significant ($p = .000$), a judgment based on the translation's main effect alone is not sufficient. All translation cell means under both viewing experience conditions should be examined and tested.

Two single-factor (one-way) analyses of variance (ANOVA) were conducted. The analysis indicated that at least one translation mode is significantly different than the others $F(3, 87) = 16.89$, $p = .0000$. Tukey test procedures were conducted to pinpoint where the significant difference was. The outcome of the Tukey test procedure indicated that the without-translation mode condition was significantly different than all other modes and variations of translation conditions at $p < .05$ level. Another one-way ANOVA to test the mean of translation modes under repeated viewing conditions was conducted. Again, the analysis indicated that at least one translation mode was significantly different than the others $F(3, 87) = 94.83$, $p = .0000$. The outcome of Tukey test procedures indicated that the without-translation mode was significantly different than all other translation modes at $p < .05$ level. Hence hypothesis 1 was accepted.

Hypothesis 2. There is a significant difference in the knowledge of program content among students who viewed an instructional television program with translation in different modes and variations.

Figure 5
ONE-WAY ANOVA
(SINGLE VIEWING)

Source	SS	DF	MS	F	Sig. F
Between Group	534.45	3	178.15	16.89	.000*
Within Group	885.90	84	10.54		
Total	1420.36	87			

*p < .05

The same analysis and test mentioned in the testing of H1 were used to test this hypothesis. The conclusion, however, was rather open-ended. Under single viewing conditions, Tukey test procedures indicated that none of the three translation modes, (i.e. dubbing, subtitles with sound and subtitles without sound) were significantly different than each other at $p < .05$ level. Hence, under single viewing conditions, H2 was rejected.

Figure 6
ONE-WAY ANOVA
(REPEATED VIEWING)

Source	SS	DF	MS	F	Sig. F
Between Group	1578.04	3	526.01	94.83	.000*
Within Group	465.90	84	5.54		
Total	2043.95	87			

*p < .05

A contrasting result was found under repeated viewing conditions. The Tukey test procedures indicated that subtitles with sound was significantly different than dubbing and subtitles without sound at $p < .05$ level. Hence, under repeated viewing condition, H2 was accepted.

Hypothesis 3. There is a significant difference in the knowledge of program content between students who viewed a television program in a single viewing experience and those who viewed the same program in a repeated viewing experience. Analysis of Variance (ANOVA) revealed that the viewing main effect was significant $F(1, 168) = 128.144$, $p = .000$. However, since interaction between viewing experiences and translation modes was significant, further analysis was needed before a conclusion on this hypothesis could be drawn.

Four t-Tests with Independent Samples were conducted. Group means of each translation mode treatment under single viewing conditions were compared with the group means of the same translation mode treatment under repeated viewing conditions. Group means of without translation under single viewing conditions were also compared to means of without translation under repeated viewing conditions.

All t-Test results supported the hypothesis that repeated viewing conditions were indeed significantly different than single viewing ($p < .05$) regardless of the translation modes. H3 therefore was accepted.

Discussion and Conclusion on the Findings

Hypothesis 1

The first hypothesis was developed in relation to the question of whether or not translations would make any difference on viewers' comprehension of the program content.

As expected, students who viewed the program without translation obtained significantly lower mean scores on the multiple-choice test compared to students who viewed the same program in translations, both under single and repeated viewing conditions. This phenomenon can be comprehended by understanding that television is a dual-sensory medium. Part of the information is conveyed through visual channels andthe rest are through auditory channels. Visual channels utilize visual symbols (in this case, scenes demonstrating the CPR procedures), while auditory channels utilize spoken words (in this case the narration and dialogues giving the details about CPR) . In the process of interpreting each symbol in television, viewers switched back and forth between the two channels (Findhal 1971) to decode the message. If the symbols were within both the sender's and the receiver's field of experience (Schramn 1954 in Heinich et al. 1989), the symbols could be decoded. When the symbols were successfully decoded, communication was successful. In other words, the message was understood. In the situation of viewing a program where the auditory channel was full of symbols which were not within the viewer's field of experience (i.e., unknown words in the program without translation), the message in the auditory channels could not be decoded. Hence, communication through auditory channels did not occur. Viewers were forced to depend upon only one channel, the visual channel. Messages in words were not recieved by the viewers, meaning they missed part of the program content.

It is concluded, therefore, that viewers acquired the least amount of knowledge on the program content when viewing an instructional television program produced in a foreign language without translation compared to when viewing the same program with translation.

Hypothesis 2

The second hypothesis was developed to test whether dubbing, subtitles with sound, and subtitles without sound, affects viewers' comprehension of program content differently. The mean scores of students who viewed the program under those three conditions were compared. Two-Way Analysis of Variance procedures indicated that translation's main effects were significant. At the same time however,

interaction between translation modes and viewing experience was also significant. Further analysis was conducted. Two separate One-Way Analyses of Variance for translation modes under single viewing and repeated viewing yielded two different results. Under single viewing, no significant differences were found between the three modes of translation. Under repeated viewing, dubbing and subtitles without sound were also not significantly different. However, under repeated viewing conditions, subtitles with sound was significantly different than dubbing and subtitles without sound. The mean scores of the students in subtitles with sound were significantly lower.

As mentioned in the Statement of the Problem section, translation by subtitles will preserve all audio signals, including music, sound effects, and spoken words, exactly as in the original production. However, when considering the communication process, the spoken words in the original language were turned into non-meaningful symbols. According to Schramn (1954 in Heinich et al. 1989), those non-meaningful symbols were categorized as "noise" which would impede the communication process. There was some indication that Schram's theory was true, as shown in the descriptive statistics where the mean score for subtitles with sound was 21.23, while the mean score for subtitles without sound was 22.50 (a difference of 1.27). The standard deviation for the subtitles with sound was 3.2, while the standard deviation for subtitles without sound was 3.0, which indicates that students in subtitles without sound had scores closer to the mean than the students in subtitles with sound. Subtitles with sound was also compared to dubbing to test the prediction that the message transmitted in visual channels and the message transmitted in audio channels would probably affect viewers differently. The mean score for dubbing was 22.36 (a difference of 1.13). Hence, there were indications that the prediction was true. Unfortunately, however, those predictions were not supported by the statistical test that showed the significance of the differences. Under repeated viewing, the differences between dubbing and subtitles without sound remained insignificant. Subtitles with sound, however, was significantly different than dubbing and subtitles without sound. The effects of second viewing seem to be more prominent on dubbing and subtitles without sound than on subtitles with sound. Under single viewing, the mean scores for dubbing and subtitles without sound were 22.36 and 22.50 respectively. Under repeated viewing, the mean score for dubbing was 29.68, an increment of 7.32. The mean score for subtitles without sound was 27.91, an incremenet of 5.41. Under single viewing, the mean score for subtitles with sound was 21.23, and under repeated viewing was 25.82, an increment of 4.59. It was obvious that the increments of the mean scores of students in dubbing and subtitles without sound were more than the increment of the mean score of students in subtitles with sound. Also, the standard deviations for dubbing and subtitles without sound were 1.6 and 1.9 respectively, while the standard deviation for subtitles with sound was 2.4. The possible reasons for the differences in mean scores and standard deviations in subtitles without sound and subtitles with sound were due to the absence and the presence of "noise" in these two modes of translation.

In subtitles without sound, the effects of second viewing and the absence of "noise" probably enabled the students to concentrate more and to better comprehend the program content. The same effects could be noticed in dubbing translation, where "noise" was also absent. Although dubbing translation employed visual and auditory channels simultaneously in communication, while subtitles without sound employed only visual channels, both translation modes appeared to have statistically equal effects under single viewing and repeated viewing.

In subtitles with sound, the effects of second viewing were present but at the same time, the effects of "noise" were also present. The "noise" acted as a kind of an obstacle during viewing. As a result, the increment of the mean scores of students in this translation mode was

lower compared to the increment of the mean score of students in subtitles without sound. The "potential difference" between subtitles with sound and the other translation modes, which was not statistically significant under single viewing conditions appeared to be statistically significant under repeated viewing.

The fact that there was no significant difference between dubbing and subtitles without sound was indeed an unexpected finding. In principle, comparison between dubbing and subtitles without sound could be equivalent to a comparison' between simultaneous audio and visual stimulants versus visual stimulants only. Earlier studies in this domain (Hoban and Van Omer 1950, Travers 1964, Findhal 1971, Reese 1983, Baggett and Ehrenfeucht 1983, Pezdek and Steven 1984, Drew and Grime 1987) supported the belief that both visual and audio channels working together were much more effective than either one alone. In fact, this was part of the theoretical ground upon which the second hypothesis in this study was built. Particular investigations into those earlier studies, however, revealed that none of the conditions used in those studies which represented visual stimulants only were identical to the subtitles without sound condition used in this study. Any discrepancy in results between earlier studies and this study might be associated with this aspect of dissimilarity.

It is concluded, therefore, that under single viewings of translated instructional television, translation modes did not contribute to any differences in the knowledge of program content among viewers. However, under repeated viewings, this study indicated that translation in dubbing and subtitles without sound helped viewers to acquire more knowledge on the program content than translation in subtitles with sound.

Hypothesis 3

The third hypothesis was developed to test whether single (one-time) viewings would make any difference in the knowledge of program content as compared to repeated (two-time) viewings. Data analyses indicate that single viewings were significantly different than repeated viewings, which appeared to be superior to single viewing.

Further investigation of the interaction between viewings and translation modes, however, revealed that the effects of repeated viewings, were particularly prominent on the program translated in dubbing and subtitles without sound. Results indicating a significant difference between single viewings and repeated viewings were not unexpected. Earlier studies on the effects of repetition yielded similar results (Ash and Jaspen 1953, Kendler, Cook and Kendler 1956, Cook 1960, Garza 1991).

The program used in this study was 30 minutes long. After the first viewing, the subjects were given the first chance to answer the comprehension questions. Since they were not told previously that they would be given a second viewing, they probably tried their best to complete the test after the first viewing. When they were given the second viewing they seemed to pay even more attention to the program. Saturation effects seem to have not occurred with that sequence and length of viewing.

In conclusion, repeated viewings seemed to significantly help viewers to acquire more knowledge on the program content than single viewings. However, the effects of repeated viewings were not consistent in all translation modes. It was equally prominent on the program translated in dubbing and in subtitles without sound, less prominent on the programtranslated in subtitles with sound, and least prominent on the program without translation.

Hypothesis 4

The final hypothesis was developed to see the interactions between translation modes and viewing experiences. Statistical procedures indicated that the interactions between the two factors were significant. Since there were no earlier studies mentioning interaction between viewings and translation modes, no references to earlier studies could be made.

Discussion and conclusions related to the

interaction effects between translation modes and viewing experiences were combined with the discussion on hypotheses 2 and 3. Hence, they are not presented again here.

Language barrier in the use of foreign-produced instructional media is a universal problem, particularly among non English speaking countries. Instructional media practitioners, as well as scholars especially in the countries concerned, should investigate and address this problem more seriously. Technological advances in electronics and atmospheric exploitation only helps human to overcome the geographical barriers and distance in communication, but not to language. It seems, due to the language barrier, McLuhan's dreamed global village is yet a reality.

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