

Selecting Media for Knowledge Transfer: Experience from the Field

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ABSTRAK

Kajian ini meneliti cara pegawai-pegawai unit atau bahagian komunikasi agensi pembangunan pertanian memilih media untuk memindahkan pengetahuan dari agensi kepada klien mereka. Data untuk kajian ini diperolehi melalui kaedah tinjauan yang melibatkan 95 orang pegawai dari 11 buah agensi dengan menggunakan borang soalselidik yang dijawab sendiri oleh responden. Secara keseluruhannya, soalan pada borang soal selidik berbentuk pilihan dan yang menggunakan skala 1 hingga 7 untuk mendapatkan pandangan dan pengalaman responden. Hasil kajian ini mendapati bahawa responden memilih benda sebenar atau realia sebagai media atau bahan yang paling baik untuk aktiviti pemindahan pengetahuan dan diikuti oleh media-media yang berkebolehan memberikan gambaran sebenar. Responden juga menyatakan bahawa media untuk pengajaran adalah berbeza dari media untuk kempen penerangan. Berkaitan dengan unsur-unsur yang perlu diambilkira semasa pemilihan media, responden menyenaraikan ciri-ciri audien, diikuti dengan tujuan komunikasi, kegemaran media audien dan tempoh yang diberi untuk menyediakan media.

ABSTRACT

This study examines the ways in which staff of communication units in agricultural development agencies select media to transfer knowledge to their clients. A survey for data collection was conducted and 95 staff of communication units from 11 development agencies were asked to respond to self-administered questionnaires. Most of the questions were open-ended and ratings of items for frequency and applicability were on a scale of 1 to 7. The study revealed that the respondents regarded actual objects or realia best in knowledge transfer activities, followed by media that convey a high degree of fidelity. The respondents also indicated that media for instruction are somewhat different from media for campaigns. The selection elements considered important in the media selection process were audience characteristics, followed by purpose of communication, audience's media preference, and time given to prepare the media.

INTRODUCTION

Appropriate communication media can greatly facilitate the delivery of knowledge from a source to a receiver and thus the selection of the right media for rapid and effective dissemination of knowledge becomes a challenge.

Due to mixed outcomes regarding the apparent effectiveness of mass media for encouraging development (Beltran 1974; Kears 1978; Hornik 1988; Mayo 1989), note that other communication media have arisen to support the communication process. Small media such as flipcharts, photographs and brochures, in

particular, have gained popularity and have proven to be effective.

The Academy for Educational Development (AED) (1985) noted that there are strengths and weaknesses in the specific media and an almost universal recognition that a single medium alone accomplishes much less than several media in combination.

In light of the current advancements in communication technology, the need for the right choice of communication media is greater than ever. Proper planning and selection to develop a single medium or combination of

media to meet the specific communication objectives, is of utmost importance.

Schramm (1977) states that media selection is a rational act, as the decision-maker has to consider a host of information related to media, message, learners, cost, and so on. Pounds (1985) believes media selection is derived from research and states that "knowing where people look for information is only half the battle for an extension communicator. Knowing where people find information is the other half".

Kemp and Smellie (1989) propose that selection be done after reviewing a number of media and considering such factors as learners, purpose or objective, content, media type, active learning, technical quality, cost, and validation.

A number of media selection models for instruction have been developed by scholars such as Anderson (1983), Reiser and Gagne (1983), Romiszowski (1988), and Reynolds and Anderson (1992). As an example, according to Gagne and Briggs (1979), there are six factors that need to be considered in media selection: 1) task variables - the type of performance expected of learners as a result of instruction; 2) learner variables - the characteristics of the learners that can be matched to specific features of instruction and media as different learners have different learning styles; 3) the assumed learning environment - the practicality of media use as it relates to size of class, capability of developing new materials, availability of media equipment, etc.; 4) the assumed development environment - the time, budget, and personnel available that could ensure the success of designing the specified delivery system; 5) the economy and the culture - to ensure that the chosen media would be acceptable and practical to the users, and are within the budget and technology of the agency; and 6) the practical factors - considerations that need to be reviewed with regard to use, audience, location of use, production and so on.

Media selection in communication is mostly related to information campaigns, and few, if any, formal models have been proposed. Instead, a number of guidelines for media selection have been proposed by several scholars (Schramm 1977; Adhikarya and Middleton 1979; Adhikarya and Posamentier 1987; Rogers and Storey 1987; Mody 1991).

Media selection for agricultural development was initiated in the late 1970s. As Kears (1978)

noted, two important new questions, although not yet the focus of much research, were at least beginning to be asked: 1) what channels of communication, administrative or otherwise, will best integrate the contributions of diverse public and private agencies in meeting agricultural development needs? 2) what communication channels and devices will help rural people clarify their alternatives, organize their resources, and make those outside the community aware of their needs?"

More recently, Rosser (1987) stated that the responsibility of the communication-research unit is to ensure that the information being disseminated through the different media is being readily received and understood by the farming community. As such, technical terms have to be simplified and translated into the vernacular languages. Also, special audio and audio-visual programmes have to be presented in an acceptable cultural format.

Watts and Claar (1983) state that as media develop, as changes occur in audiences and their access to media, as research reveals more about the complexity and richness of human communication, and as planners of education and communication become more adept, an effective media selection process is very important because it is the basis for successful communication.

There are at least five ways in which appropriate communication media can help in the transfer of knowledge. First, media improve reach and access. "Reach" means that a larger number of users will receive the knowledge and "access" means users can easily get the knowledge whenever it is required. As a result of better reach and access, knowledge will be more equally distributed among the users. Second, it facilitates the teaching and learning process. When learners can understand knowledge better, it is more likely that the knowledge will eventually be utilized. Third, it helps extension agents perform their tasks more efficiently as it helps extension agents to cope with the increase of knowledge from research institutions and to present new knowledge effectively. Also, information can be disseminated more widely and democratically in this manner. Fourth, a proper media selection procedure can save time, personnel and cost of media production. In this manner the agency's resources will be better utilized. Fifth, the media serve the additional

purpose of documenting information as well as keeping records of the knowledge that has been transmitted by agencies.

METHODOLOGY

The purpose of this media selection study was to determine how the staff of communication units of agricultural extension agencies in a developing country select particular communication media to disseminate agricultural knowledge to farmers. More precisely, the study proposed first to gain a better understanding of the following:

- a. Which communication media would developers consider most appropriate for instruction and for campaigns, and whether they perceived any difference between the media for these two particular purposes?
- b. Which selection factors were considered salient to media developers when choosing the most appropriate communication media for knowledge transfer and how the selection factors would be prioritized?

In order to answer these questions, a survey utilizing self-administered questionnaires was developed to gather data from the respondents. A scale of one to seven was often used to evaluate the perceptions and experiences of the respondents. The seven value scale was chosen because Chaffee (1991) noted that "reliability improved up to, but not beyond, seven categories".

The reliability measure, Cronbach's Alpha was applied to each question that had a scale of 1 to 7. It was found that the Cronbach's Alpha values on most of the questions were relatively high (ranged from .5939 to .9297).

The total of 108 staff members involved in media planning and production at the 11 agricultural extension agencies were selected for the study. Of the 108 questionnaires distributed to the staff, 95 were returned (88% response rate).

Data were coded and entered into the computer using the Statistical Package for Social Science X (SPSSX) program for data analysis. Percentages, means, standard deviations and difference of means t-tests were conducted. The need (Blalock 1979) to better understand and explain the differences among the respondents and among the agencies urged the researcher to

perform such statistical tests. The significance level for the statistical analyses was set at .05.

RESULTS

Results of this study show that all 11 agricultural extension agencies were capable and had been producing many kinds of communication media for information dissemination. All agencies reported having adequate facilities, personnel and budgets for media production. The number of staff within the agencies ranged from 3 to 27.

The respondents' ages ranged from 20 to 54 years (mean = 36.93 and std. dev. = 6.54); their working experience ranged from four months to more than 25 years (mean = 8.71; std. dev. = 6.16) and their educational level ranged from high school to Master's degree. Respondents with titles "Officers," "Heads of Unit", and "Assistant Officers" possessed technical expertise in agricultural subjects, whereas "Technicians", "Artists", "Photographers", "Operators", and "Others" were familiar with the production of communication media. Thus, the communication units of these agencies had a pool of technical expertise and media preparation talent. A combination of those who know the subject matter and those who know how to present the information or message in a suitable medium for a specific communication situation can be expected to be particularly effective in knowledge transfer activities.

Media Appropriate for Instruction

Respondents were asked to rate the communication media they considered appropriate for instruction using a scale of 1 (not at all appropriate) to 7 (very/most appropriate). Out of the 29 listed media, this study found that realia (the actual object or sample of the real thing was considered by 46 respondents (48.4%) to be the most appropriate medium for instruction (scale of 7). The 10 media considered most appropriate for instruction are displayed in Table 1.

The list of media considered appropriate for instruction by respondents comprised a mixture of print, electronic, "big", and "small" media. It can be seen that the top 10 media considered appropriate for instruction by respondents are mostly visual media, i.e., media that use or contain pictures and illustrations to convey messages or knowledge. A risalah is a kind of publication containing basic and

TABLE 1
Communication media rated for instruction

Type of Medium	Mean Values (N=95)
Realia	6.18
Video	5.98
Slides	5.79
Films	5.54
OHP Transparencies	5.49
Slide-tape series	5.45
Television	5.43
Flipcharts	5.31
Risalah	5.16
Photographs	5.08

comprehensive information on one or more agricultural techniques, written in a semi-technical to popular writing style and intended for farmers.

Media Appropriate for Information Dissemination

Using the same list of 29 media, the respondents were asked to rate the appropriateness of these media for information dissemination. Likewise, a scale of 1 (not all appropriate) to 7 (very/most appropriate) was used.

From the listed media, 50 respondents (52.6%) consider television to be the most appropriate medium for information dissemination (scale of 7). Other media rated to be appropriate for this purpose are listed in Table 2.

TABLE 2
Communication media rated for information dissemination

Type of Medium	Mean Values (N=95)
Television	6.35
Radio	5.98
Posters	5.93
Newspapers	5.92
Video	5.83
Realia	5.79
Exhibitions	5.77
Films	5.67
Pamphlets	5.67
Risalah	5.55

As shown in Table 2, the respondents listed several mass media such as television, radio and newspapers to be appropriate for information dissemination. Other media that received relatively high ratings included video, posters, realia, and exhibitions. These results show that the respondents consider the mass media to be most appropriate for information dissemination. As such, these findings are in line with the general practices and perceptions of those involved in communication.

It can also be noted that the tenth-rated medium for information dissemination has a higher mean than the tenth-rated medium for instruction. When comparing media appropriate for instruction and for campaigns (Table 1 and Table 2), one should note that there are five media (television, video, realia, films, and risalah) that made it to the top ten media in both lists.

When asked if they considered communication media for instruction to be different from communication media for information dissemination, 72.63% of the respondents said they did, 20.00% said there was no difference between those two and 7.37% were uncertain. This acknowledgment by the respondents is clearly shown by several media that are rated differently for instruction and information dissemination. In addition, when asked whether they used different treatments when producing communication media for instruction versus information dissemination, 75.79% said they did, 20.0% said no, and 4.21% were uncertain.

To verify the respondents' opinions about the differences between media for instruction and media for information dissemination, a paired t-test procedure was performed on all 29 listed media. Basically this procedure compares the means of a medium that respondents regard as appropriate for instruction with the mean of the same medium that respondents regard appropriate for information dissemination. Results of paired t-test revealed 19 media showed statistically significant difference at $p < .05$, and 10 media showed no statistical difference at $p = .05$. The media that showed significant difference at $p < .05$ included realia, television, radio, newspapers, risalah, posters, flipcharts, and pamphlets. The media that showed no statistical difference at $p = .05$ included video, films, slide-tape series, and photographs.

Thus, it can be said that respondents of this study believe communication media for instruction are different from those media intended for information dissemination. This group of respondents is also more likely to record a difference throughout the media production process.

To further comprehend respondents' perceptions about the suitability of particular media for knowledge transfer, the means of media regarded as appropriate for instruction and media appropriate for information dissemination were averaged. As a result, another list of media ratings was developed. The list of top 10 media is shown in Table 3. Since the list consists of media for instruction and media for information dissemination, this new media rating is simply called "media appropriate for knowledge transfer".

TABLE 3

Communication media rated for knowledge transfer

Type of medium	Averaged mean (N=95)
Realia	5.98
Video	5.91
Slides	5.89
Films	5.61
OHP Transparencies	5.43
Slide-tape series	5.38
Television	5.36
Flipcharts	5.35
Risalah	5.31
Photographs	5.30

This new media rating clearly indicates that realia (or the real object) is the most suitable medium for either instruction or knowledge dissemination. The next four media suitable for instruction or information dissemination are also those best able to portray reality. Two print media, one audio medium, and a combination of media (exhibition) rounded out the 10 media most appropriate for knowledge transfer. This new list of media ratings can be considered a principal finding of this research because it was developed according to the perceptions and experience of the media developers themselves.

In order to ensure that the ratings of media for knowledge transfer by the respondents are

"real," a coefficient of concordance (Kendall w) was computed. A w of .1132 was found at $p < .05$, Chi Square = 85.6026, and d. f. = 9. Thus, there is a significant difference in the way the respondents rated the media for knowledge transfer.

It should be noted that not all media considered by the respondents to be appropriate for knowledge transfer are available within their agencies. For example, the agencies did not own television and radio stations, and they did not publish newspapers. However, the agencies usually take part or contribute in the production of television and radio programmes that are intended for farmers. Also, it is a common practice for producers of television and radio programmes to consult the agencies for programme contents. On the other hand, facilities are available for production of realia, video, slides, and slide-tape series, to mount exhibitions, and publish risalah.

Armed with knowledge of the types of communication media the respondents consider appropriate for knowledge transfer, we will examine the elements or factors they consider important when selecting appropriate medium or combination of media for particular purposes.

Factors Considered in Selecting Media

It is useful to note at this point that the present study assumes that the respondents would base their choice of a particular medium or combination of media for instruction or knowledge dissemination on the potential and/or proven effectiveness of certain criteria, according to certain procedures, and after considering a number of factors or elements. The questionnaire listed 25 possible elements that respondents could consider when making a media selection, and they were asked to rate the importance of the listed elements, on a scale of 1 (not at all important) to 7 (most or very important).

It was found that, overall, 53 respondents (55.79%) rated "purpose of communication" with a scale of "7" which means that the respondents considered it to be the most important element in selecting media. This was followed by "audience characteristics", chosen by 47.37% of the respondents who also gave a scale of "7." However, when mean values are listed in order to better present the ratings of selection elements, "audience characteristics" had

a higher value than "purpose of communication". Table 4 shows the ratings of the top 10 selection elements considered important by the respondents.

TABLE 4
Elements rated for media selection

Selection element	Mean (N = 95)
Audience characteristics	6.29
Purpose of communication	6.24
Audience media preference	6.00
Time to complete media	5.98
'User' of media	5.86
Units capabilities	5.83
Visual illustration	5.79
Time to disseminate information	5.79
Availability of equipment	5.77
Location of media use	5.72

As shown in Table 4, the respondents indicated that, based on the mean values, "audience characteristics", "purpose of communication", "audience media preference", "time to complete media production" and "user of media" were the top five elements to be considered when selecting media.

To further explain the importance of the 25 listed elements in media selection, principal components analysis was performed. This analysis yielded seven factors with Eigen values of more than 1.0, (using Kaiser (1960) minimum Eigen value) and cumulative percentage of about 70%. The range of communalities for the seven factors was between .4489 and .8517, and only 35% of the residuals was less than .05. Thus, it appears that a 7 factor solution best fits the model for the 25 selection elements.

The first factor consisted of four items: "objective of communication," "audience characteristics," "user of media," and "audience media preferences," with loadings ranging from .5334 to .8606. The second factor consisted of three items: "full colour," "ease of media production," and "ease of updating content" with loadings ranging from .6511 to .7594. The third factor consisted of the items: "audio need," "visual movement," "media flexibility," and "media portability" with loadings ranging from .6226 to .7628. The fourth factor included

"location of media use," "time to disseminate information," "media durability," and "ease of media usage" with loadings ranging from .4765 to .7532. The items: "own capabilities," "colleague capabilities," and "units capabilities" were found in the fifth factor, with loadings ranging from .6872 to .8149. The sixth factor consisted of "time given to complete media production," "printed texts," and "visual illustration" with loadings ranging from .5797 to .8232. Finally, the seventh factor consisted of "production cost," "instruction from above," "availability of equipment," and "media selection guidelines" with loadings ranging from .4560 to .8083.

After ascertaining the media which the respondents consider to be appropriate for instruction and information dissemination or campaign and the kinds of selection factors that respondents considered important when deciding on the most appropriate media for knowledge transfer activity, perhaps now we have a better understanding of how the communication unit staff of the agricultural extension agencies select and make decisions on the most suitable media for their knowledge transfer activities. Can the media selection experience obtained from this study be shared by other development agencies in other parts of the world? Obviously, the potential is there.

DISCUSSION AND CONCLUSION

It should be stressed that the main purpose of selecting communication media was to best facilitate the transfer of information or knowledge from a source to intended receivers. Theoretically, using suitable media that will carry appropriate content (information, message, or knowledge) can help the process in at least two ways: improve both reach and access and facilitate teaching-learning activities. However, methodical media selection has become necessary because information agencies can only disseminate information through media they can produce or get access to; and, on the other end, many potential receivers of information do not own or have access to certain media, resulting in the limitations on their access to information.

The types of media the staff members of the communication units considered right for knowledge transfer revealed a striking balance between the media that they considered to be highly appropriate for instruction and the media they considered to be highly appropriate for

information dissemination. According to them, methods of knowledge transfer that employ actual objects in face-to-face communication are best. However, if this is not possible then media that convey reality with a high degree of fidelity are highly recommended.

Respondents' choice of realia as the most appropriate medium for knowledge transfer is highly revealing - realia has always been ideal for any kind of teaching-learning, as it involves all human senses. Furthermore, in agriculture, use of real-life examples is highly recommended because farmers can relate to them directly, and usually the real things are particularly convincing. Respondents also considered video, television, and films to be appropriate for knowledge transfer. These media visually present real actions or motions of subjects in conjunction with audio, a portrayal of reality that is as close to reality as communication technology can get. Even though radio was rated tenth as a medium for knowledge transfer, it had been rated second by respondents as appropriate for information dissemination. Radio was rated slightly lower in this case by the respondents, perhaps due to its inability to present visual information. Nevertheless, it should be noted that radio has always been popular in project work in many developing countries.

Thus, it can be concluded that the respondents consider those communication media which can present reality with the greatest fidelity to be the most appropriate media for knowledge transfer. If it is not possible to use the kind of media just mentioned, then a media mix is preferred. If a media mix is also not possible, then an audio medium is suggested.

With regard to selection elements that respondents consider to be important when making media decisions, the top-ten elements (Table 4) can be categorized into three groups. The first group can be labelled as "theoretical" comprising the elements of audience characteristics, purpose of communication, audience media preference and user of media (extension agents or instructors). The second group can be labelled as "practical or logistic" consisting of the elements of time to complete media, unit's capabilities, time to disseminate information, availability of equipment and location of media use. The remaining element, visual illustration, can be categorized as "media attribute."

From these groupings we can see that the respondents consider theoretical and practical or logistic elements to be very important when deciding on the most appropriate media for knowledge transfer activities, followed by media attributes. Clearly, the respondents placed theoretical elements higher in their ratings than practical or logistic elements, and media attributes.

Thus, it can be concluded that the respondents regarded the theoretical elements to be the most important in deciding which medium or media combination is appropriate for a particular knowledge transfer activity, followed in order by the elements of practical or logistic, and media attributes. After all, in the final analysis, media are vehicles that facilitate the transfer of information from a source to an audience. However, communication media must be selected and developed carefully because without proper planning and consideration their use in development work could actually bring about negative outcomes.

Likewise, as noted by the respondents of this study, it is very important to treat a medium for instruction differently from a medium intended for an information campaign.

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