

# Communication Strategies Training for Science and Technology Graduate Students

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## Abstract

This article describes a research study which investigates whether the teaching of specific communication strategies, namely, back-channels, pause fillers and hesitation devices, requests for clarification, and circumlocutions, will result in learners making greater use of these strategies and improving the effectiveness of their communication skills in English. The participants were 10 Ph.D Science and Technology graduate students who volunteered to participate in a thirty-hour training programme to improve their speaking skills. Multiple sources of information for data collection, such as interviews, observations, audio-recordings and a questionnaire were used to provide detailed in-depth data, which were recorded and transcribed. Wilcoxon matched-pairs signed-ranks tests revealed a highly significant difference at 0.01 level of the frequency of use for all the communication strategies after the training. The results showed that the students used the communication strategies more frequently and more appropriately both in the post-test and the delayed post-test than they did in the pre-test.

*Keywords: communication strategies; speaking skill; graduate students*

## บทคัดย่อ

งานวิจัยนี้มีจุดประสงค์เพื่อศึกษาผลของการสอนกลยุทธ์การสื่อสาร 4 ประเภท คือ การทวนเสียง ประกอบ (Back-channels) การหยุดชั่วขณะเพื่อคิด (Pause fillers and hesitation devices) การขอคำอธิบาย (Requests for clarification) และการพูดอ้อม (Circumlocutions) ว่าจะมีผลต่อการเพิ่มการใช้

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กลยุทธ์การสื่อสารและพัฒนาประสิทธิภาพทักษะการสื่อสารเป็นภาษาอังกฤษของนักศึกษาหรือไม่ กลุ่มตัวอย่างในการศึกษานี้คือ นักศึกษาปริญญาเอกสาขาวิชาวิทยาศาสตร์และเทคโนโลยีจำนวน 10 คน ซึ่งอาสาสมัครเข้าร่วมการอบรม การใช้กลยุทธ์การสื่อสารเป็นเวลา 30 ชั่วโมงเพื่อพัฒนาทักษะการพูด เครื่องมือที่ใช้ในการเก็บข้อมูลได้แก่ การสัมภาษณ์ การสังเกตการณ์ในชั้นเรียน การใช้แถบบันทึกเสียง บทสนทนาและการใช้แบบสอบถาม การวิเคราะห์ข้อมูลได้จากการนำบทสนทนามาถอดข้อความและประมวลผลโดยใช้สถิติ Wilcoxon matched-pairs signed-ranks tests ผลของการศึกษาพบว่า ความถี่ในการใช้กลยุทธ์การสื่อสารทุกประเภทของนักศึกษาเพิ่มขึ้นอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01 หลังจากได้รับการอบรม นอกจากนี้ นักศึกษายังสามารถใช้กลยุทธ์การสื่อสารได้เหมาะสมมากขึ้นในการสอบหลังการอบรมทั้ง 2 ครั้ง (Post-test and Delayed post-test) เมื่อเปรียบเทียบกับก่อนการอบรม (Pre-test)

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## Introduction

Research on L2 classroom interaction began in the 1960s with the aim of evaluating the effectiveness of different methods in foreign language teaching in the hope that the findings would show the best teaching methods and their characteristics. Descriptions of interaction focused initially on the language used by the teacher, especially teacher questions and the learner responses elicited, teachers' feedback and turn-allocation behaviour.

Since the 1970's, studies of communication strategies have occupied an important place in Second Language Acquisition (SLA) research. A review of the literature on communication strategies reveals that the research is divided into various theoretical perspectives. The view that communication strategies are verbal plans within a speech production framework was proposed by Faerch and Kasper (1983a, 1983b, who adopt a psycholinguistic approach to the study of communication strategies, in which there are two phases of speech production: a planning phase and an execution phrase. The aim of the planning phase is to develop a plan which can then be executed to allow the speaker/ hearer to achieve his communicative goals. It seems that in this phase "the language user selects the rules and items which he considers most appropriate for establishing a plan, the execution of which will lead to verbal behaviour which is expected to satisfy the original goal"(1983a, p.25).

Communication strategies are a part of the planning process. They are needed when learners have a problem with their initial plan which they are unable to carry out (Faerch and Kasper, 1983a, 1983b). There are two possible alternatives for the learner: one alternative is to avoid the problem.

According to Faerch and Kasper (1983a, 1983b), this occurs when learners change their original communicative goal by means of some kind of reduction strategy. The other solution is to maintain the original goal by developing an alternative plan through the use of an achievement strategy. Achievement strategies are divided into those that are 'compensatory' (replacement of an initial plan with a 'strategic' plan) and 'retrieval' (perseverance with the initial plan by, for example, searching for the item required). Some examples of achievement strategies include circumlocution, code-switching, word-coinage, and requests for clarification. Fillers and hesitation devices are categorized as retrieval strategies.

According to the literature, communication strategies can also be viewed from a discourse analysis perspective. This is illustrated in the work of Tarone (1980). She views communication strategies as a means for two interlocutors to agree on a meaning in situations where an understanding of the meaning is not shared. Also Tarone adopts an interactional perspective whilst Canale (1983) further develops the idea of strategies to include non-problem solving strategies. He proposes that communication strategies involve any attempt to "enhance the effectiveness of communication". The focus is on strategies learners employ when faced with a gap in their vocabulary (Faerch & Kasper, 1983, p75).

According to Bialystok (1990), communication is not the only domain of language use that invites strategic behaviour. Learning a second language, understanding spoken language beyond one's formal proficiency level, achieving pragmatic goals with a second language in appropriate ways may all be considered strategic in that the speaker / learner has to make some choices about how to achieve their goal. Even within second language use, therefore, there are many questions regarding the nature of strategy use. However, there are two kinds of strategies that should be considered: strategies for learning and strategies for communication. In one of Bialystok's papers on "Some factors in the selection and implementation of communication strategies", she investigates "*who uses which strategy when and with what effect?*" As cited in Kasper & Kellerman (1997), Ellis (1994) points out that one of the central empirical problems arising from input theory is how learners can access comprehensible input. The most effective source of input seems to be conversational exchanges in which learners engage either together with other L2 learners or native speakers and in which they negotiate meanings.

Yet, Dornyei (1995) has extended his definition of communication strategies to include devices that are not strictly meaning-related. He argues that the use of fillers and hesitation devices are also problem-solving strategies. For Dornyei and Scott (1995a, 1995b), strategic language use is equated with communication problem-solving in general. They suggest that communication strategies should include every attempt to cope with any language-related problem of which the speaker is aware during the course of communication. Speaking to a non-native speaker may require that we redirect special attention to lexical choices. According to Kellerman & Bialystock, 1997, as listeners we may direct our attention to para- and extra-linguistic aspects of a message - gestures, kinesics, intonation, the surroundings - as these may assist in the interpretation of the message. They refer to two possible strategies to achieve this, which are the conceptual strategy and the code strategy. These correspond to two kinds of mental representation. Conceptual strategy is explained as a process of analysis by means of utterances fitting traditional descriptions, such as paraphrase, circumlocution, some word coinages, mimetic, or iconic gestures, whilst the code strategy refers to a process of analysis which tries to solve lexical problems. Also, Shumin (2001) claims that EFL learners need explicit instruction in speaking in order to gradually develop their speaking skills which can only be acquired through extensive and graded practice.

Bygate (1987) points out that one of the basic problems in foreign-language teaching is to prepare learners to be able to use the language and speaking in a second language (L2) involves a particular type of communication skill. The mismatch between L2 speakers' linguistic resources and communicative intentions leads to a number of systematic language phenomena whose main function is to handle difficulties or breakdowns in communication. Also, as the English language has now become the language of international communication, people need to use English worldwide for communicating information such as for their professional contacts, academic studies, business activities and personal lives (Tudor, 2001; Alptekin, 2002). Therefore, the idea has developed recently that the language presented in the classroom should be as authentic as possible, so as to represent the reality of native speaker language use. Moreover, effective oral communication requires the ability to use the language appropriately in social interaction (Dornyei and Scott, 1997; Alptekin, 2002; Littlemore, 2003). Therefore, it can be difficult for EFL learners to speak the target language fluently and appropriately

(Shumin, 2001).

As a result of these developments, foreign language learners are now being trained to use the target language for communication in real-life situations. Because of this recent focus on communication, educators should not overlook the fact that a significant proportion of real-life communication is problematic, and learners are likely to experience communication breakdown, and therefore the means of coping with these problems, such as communication strategies, require particular attention.

The subjects of this study, who were Science and Technology graduate students at Suranaree University of Technology (SUT), experienced considerable difficulty in coping with such communication problems for several reasons. For example, at SUT English is taught on a special course that focuses on English for Science and Technology (EST) in which reading is the main concern, with relatively little attention given to listening and speaking. This is because reading skills are considered a necessity for graduate students as they need such skills to be able to read their texts or related articles for their research work. Moreover, SUT students have little opportunity to practice English with native speakers of English or foreigners. As a result, when they have to communicate with foreigners or when they have to present their research work, they face difficulties. In order to help them to improve their ability in communication and to avoid communication breakdowns, it was therefore proposed to teach them some specific communication strategies, such as back-channels, pause fillers and hesitation devices, requests for clarification and circumlocution, which other researchers have studied and found useful for second language learners at different levels.

This study aims to answer the following questions:

1. Will the teaching of communication strategies result in the learners making greater use of communication strategies?
2. How do students use communication strategies in their conversation after the training?

### **Limitations of the study**

This study was conducted with a small number of participants consisting of 10 subjects whose majors were Science and Technology. The procedures followed in the investigation were triangulated methods using in-depth data collection involving multiple sources of information, that is, a semi-structured

interview, classroom observations, audio-recordings, and a questionnaire. A course of thirty hours training was given to the participants although this may not be enough for learners to use all the communication strategies appropriately all the time, but the time limitation of the trimester at Suranaree University of Technology, which only has 12 weeks per term which had to include a semi-structured interview, a pre-test, a thirty-hour training programme, an immediate post test and a delayed post test, limited the training to 17 weeks. This limitation needs to be taken into consideration with regard to the length of training for any further studies.

## **Methodology**

### **Subjects**

Ten graduate students whose majors are Animal Production, Chemistry, Environmental Biology, Remote Sensing, and Electrical Engineering volunteered to participate in a thirty hour course of training in oral communication in English taught by a native English teacher. A semi-structured interview (see Appendix A) was conducted by a native English teacher before the training to find out the students' proficiency in English, as well as to prepare materials appropriate to their language level and the fluency scale for the Common European Framework (cited in Fulcher, 2003) was used to rate the English language proficiency levels of the students. The students' proficiency levels were found to range from basic users to independent users.

### **Procedure**

A study plan, instruments, a teaching plan and the materials were prepared and developed. A pre-test was carried out one week before the training, consisting of four conversation tasks in which the students were required to explain feelings, explain instruments, formulate a definition and make dialogues (see Appendix B). The teaching programme consisted of a total of thirty hours of training in the use of communication strategies, namely, back-channels, pause fillers and hesitation devices, requests for clarification and circumlocution. This programme was taught by a well-qualified and experienced native English language teacher. The data collection included classroom observations which were used for obtaining information about the learning

process and problems or difficulties that occurred in classroom interaction, informal interviews which were used during the training to find out about the students' opinions of the programme, and audio-recordings of all the students' dialogues at the end of each training session which were used to find out what communication strategies the students used and how they used them. An immediate post-test was conducted one week after the training and a questionnaire was also completed to investigate the opinion of the participants about the communication strategies training. A delayed post-test was conducted four weeks after the immediate post-test. The data used for the analysis was taken from the transcriptions of the audio-recordings, the classroom observations, informal interviews, and the questionnaire.

## Results and Discussion

### *Research Question One*

1. Will the teaching of communication strategies result in the learners making greater use of communication strategies?

The following table compares the results of the teaching of communication strategies in the pre-test, the post-test and the delayed-post-test.

**Table 1 : The Frequency of the Communication Strategies Used in the Pre-test, Post-test and Delayed Post-test**

<b>Communication Strategies</b>	<b>Pre-test</b>	<b>Post-test</b>	<b>Delayed Post-test</b>
Back-channels	155	343	309
Pause fillers & Hesitation Devices	442	585	475
Requests for Clarification	40	41	21
Circumlocution	35	27	30

With regard to the frequency of use of the different communication strategies employed by the students in the pre-test, we find that the students used mainly pause-fillers and hesitation devices (442), followed by back-channels (155), then requests for clarification (40), and finally, circumlocution (35).

These frequencies compare with the following frequencies for the post-test: 585 for pause-fillers and hesitation devices, 343 for back-channels, 41 for requests for clarification and 27 for circumlocution. These figures show a substantial increase of 143 for pause-fillers and hesitation devices, and of 188 for back-channels, with almost the same frequency for requests for clarification (40:41) and a decrease of 8 in the use of circumlocutions.

For the delayed post-test the frequencies of use for the various strategies were 475 for pause-fillers and hesitation devices, 309 for back-channels, 21 for requests for clarification, and 30 for circumlocution. Compared to the post-test, these frequencies show a decrease of 110 for pause-fillers and hesitation devices, 34 for back-channels, 20 for requests for clarification and an increase of 3 in the use of circumlocutions.

As regards the use of particular strategies, all students in the pre-test mostly used pause fillers and hesitation devices and back-channels, but only a few requests for clarification and circumlocution.

In the post-test, all the students still used all the types of communication strategies, although they used substantially more pause fillers and hesitation devices and back-channels than requests for clarification and circumlocution. The reason for this was that the activities provided them with less opportunities to use requests for clarification and circumlocution.

In conclusion; we can see that the training programme in the use of communication strategies was effective with respect to pause-fillers and hesitation devices and back-channels, but apparently not so effective with respect to requests for clarification and circumlocution. However, these two latter strategies may not show increases because after the training the students were able to use them more effectively and so did not need to repeat them in order to obtain a suitable response.

### *Research Question Two*

2. How appropriately do students use communication strategies in their conversation after the training?

The following table shows how appropriately and correctly the students used communication strategies in their conversation after the training.



**Table 2 : A Comparison of the Total Number of Communication Strategies Used appropriately, inappropriately and incorrectly in the Pre-test and the Post-test**

Student	Appropriate Use		Inappropriate Use		Incorrect Use		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	58	58	50	37	5	5	113	100
2	73	51	32	13	22	10	127	74
3	43	44	10	24	7	8	60	76
4	12	88	6	3	8	15	26	106
5	47	58	38	50	24	20	109	128
6	40	52	26	51	35	20	101	123
7	23	57	8	21	3	8	34	86
8	40	66	23	48	10	35	73	149
9	13	55	7	18	0	3	20	76
10	7	49	2	19	2	14	11	82
<b>Total</b>	<b>356</b>	<b>578</b>	<b>202</b>	<b>284</b>	<b>116</b>	<b>138</b>	<b>674</b>	<b>1000</b>
<b>Percentage</b>	<b>52.82</b>	<b>57.80</b>	<b>29.97</b>	<b>28.40</b>	<b>17.21</b>	<b>13.80</b>		

There is a marked difference in the frequency of use by the ten students between the pre-test and the post-test. The total difference in the number of occurrences for all students was 674 for the pre-test compared to 1000 for the post-test. This clearly shows a considerable effect from the teaching of communication strategies. However, 47.18% of these occurrences in the pre-test and 42.2% of these occurrences in the post-test were used either inappropriately or incorrectly. This is not at all surprising since the students are obviously trying to use communication strategies as much as possible, but still lack the practice and experience to use them appropriately in all situations.

Moreover, the level of appropriateness of the weaker students (student 9) improved considerably (55 appropriate uses compared to 13 appropriate uses in the pre-test). The weakest of all the students (student 4) shows a dramatic increase in the frequency of use for all the strategies (a total of 132 occurrences) with a corresponding improvement in appropriateness. This reflects the general increase in confidence in the use of English of all the students following the training programme.

However, to ascertain that the frequency of the communication strategies used did not occur by chance, Wilcoxon matched-pairs signed-ranks tests

were calculated and the results when we compare the pre-test with the post-test in terms of frequency of use showed a significant difference at .05 level ( $T = 7, T \leq 8; p < 0.05$ , 2-tailed test). Also, the results from comparing the pre-test with the post-test in terms of appropriate use showed a significant difference at .05 level ( $T = 4, T \leq 6; p < 0.05$ , 2-tailed test), both in the pre-test and the post-test (Roscoe, 1975).

If we compare the total number of communication strategies used by each of the students in the three categories of appropriate, inappropriate and incorrect use following the training, we find that in the post-test all the students used the communication strategies more appropriately than inappropriately or incorrectly.

Some examples given below are the inappropriate and incorrect usages of the communication strategies as used in the pre-test.

*An example of an inappropriate and incorrect use of back-channels and pause fillers and hesitation devices*

Pim: How many people are there in your family?

Pooky: **Or (Thai)**...there are er...six people.

Pim: Really? Who they are?

Pooky: Um...they are my father, my mother, my bro...my younger brother, my husband, my son and me.

Pim: Oh, really? Yes, um...how how old are your parents?

Pooky: **Oa (Thai)**...*that well*. My father, is sixty-seven and my mother is fifty-five.

Pim: Oh, my father er...my father. Your father er...younger than mot...your mother.

Pooky: My father my father old older older than my mother.

Pim: [older older (laughs)]

Pooky: But my er...father is **er**...very **er**... energetic, he work he works in the farm everyday.

*Examples of inappropriate use of requests for clarification.*

S2: I have been reading an interesting article about Jurassic Period.

S1: What is it? Jurassic Period?

- S2: Um...it's er...geological period of two thousand two thousand and one hundred and fifty million years ago when dinosaurs and other reptile reach their maximum size on land, sea and air.
- S1: (laughs and mumbles) er... ***again please?***
- S2: Yes, it's reptile reach them or...(Thai) reptile reach their maximum size land or...
- S1: What's live...***again please?***

*Examples of incorrect use of requests for clarification.*

- S1: Er...Black Hole is a region in outside space where the field of gravity is so extremely extremely strong that no matter or radiation can escape from it.
- S2: (laughs silently) Um...Black Hole is a region outside where field radiation about it (laughs) I don't (laughs)
- S1: No, ah...(Thai)
- S2: Um...***what's in your mean pardon?***
- S2: [It is region outside in vacase in vacasion so extreme strong no matter radiation from escape from it]. ***What's about mean?***
- S1: Er...A Black Hole a Black Hole is a region in outer space where the field of gravity is so extremely strong that no matter or radiation can escape from it.

*Examples of incorrect use of circumlocutions*

- S2: [***Um...Okay, er...when when you er...in er...oh in the night er...usually you er...you...***]
- S1: [(laughs) Sleep?]
- S2: ***Yes, er...example er...when you er...excite or when you see flower you happy and happy very much example happy very much happy happy...***
- S1: (laughs) I don't know please tell me?
- S2: [Or...(Thai) Okay, sleepy.
- S1: Sleepy?

It is evident from the examples shown above that there were a large number of inappropriate and incorrect usages of communication strategies in the pre-test before the training. This may be because of the students lack of knowledge of the target language and lack of confidence in using the

language. Also, it is noticeable that the students who could not respond appropriately, frequently laughed excessively instead of answering the question, which is a cultural reaction to embarrassment. This is different from what is cited in Wannaruk (1997) who argues that “laughter is one type of back-channel which displays consensus among interlocutors (Jefferson, 1979). When a speaker laughs, it means that s/he understands the message and signals his/her personal response as well”.

Interestingly, based on the data obtained from the observations and the audio-recordings, the weaker students used these two strategies far more frequently, but also with less appropriateness than the stronger students did.

The following excerpts show the improvement of the students in using communication strategies in the post-test following the training.

*An appropriate use of back-channels.*

- S1: I have been reading an interesting article about Nuclear Fusion.  
 S2: **Uh-huh**  
 S1: Do you know, do you know about it?  
 S2: Er...no, I don't know.  
 S1: Okay, er...I explain to you, er...when atomic nuclear join...together to make heavy nuclei.  
 S2: **Uh-huh**

It is clear from this that student 2 is able to use back-channels appropriately because she is showing her partner that she is following what is being said, instead of simply using a non-verbal device (nodding) or remaining silent, like some of the other students.

*An appropriate use of pause fillers and hesitation devices.*

- S1: **Er...**Hydrography is refer to the science of making map of ocean, lake, and river, is that right?  
 S2: Yes, Okay right.

As this technical term is quite difficult, student 1 wanted to gain time to think for a moment before explaining the definition to her interlocutor so she used a pause filler.

*An appropriate use of requests for clarification.*

- S1: Oh, what kind of song do you like?

S2: Actually, I like country song.

S1: Ar...(Thai) that sounds interesting. Er...,but I'm sorry I don't know. ***Could you tell me what country song is?***

S2: Yes, of course.

It can be seen in this excerpt that student 1 wanted some help, so she used a request for clarification appropriately to ask for help in this conversation.

An appropriate use of circumlocution.

S1: ***I have got some words about the equipment in the kitchen.***

S2: Um-huh

S1: ***It use for er... use for roast chicken or cooking food.***

S2: Um... I'm sorry, I er... could you could you explain it?

S1: Yeah, ***it's look like a box.***

S2: Microwave?

S1: Yes, that's right.

It is clearly seen that student 1 is trying to use circumlocution to help his interlocutor and he eventually succeeded, so his interlocutor was able to guess what the word was.

It is evident from the excerpts shown above that the students used all the various types of communication strategies to enhance the effectiveness of their communication strategies and to achieve their pragmatic goals in a second language in appropriate ways (Canale, 1983; Bialystok, 1990), although they used substantially more pause fillers and hesitation devices, which are used as problem-solving strategies (Dornyei, 1995), and they also used more back-channels than requests for clarification and circumlocution. Also, the participants showed a corresponding improvement in using the strategies appropriately, which reflects their general increase in confidence in the use of English following the training programme.

## Conclusion

The findings of the present study reveal that the teaching of communication strategies was effective with respect to pause fillers and hesitation devices and back- channels, but apparently not so effective with respect to requests for clarification and circumlocution. This may be because the teach-

ing materials provided limited opportunities for the use of requests for clarification and circumlocution strategies. Another reason why these two latter strategies may not show increases is because after the training the students were able to use them more effectively and so did not need to repeat them in order to obtain a suitable response. Also the findings from the study suggest that the training programme had very positive effects which were further increased by a period of consolidation. So, it can be assumed that after the training the students had learnt from their previous experience how to use the communication strategies effectively.

Nonetheless, the need for research in the teaching of communication strategies is still crucial and further in-depth investigations should be conducted to enhance the ability of Thai students to communicate effectively both in the classroom and outside the classroom.

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#### **Appendix A: A Preliminary Semi-Structured Interview of Graduate Students for a Research Programme on the Teaching of Communication Strategies**

1. What's your name?
2. What's your major?
3. Which year are you in?
4. Where did you study before you came to SUT?
5. Have you ever been abroad?
6. When do you need to use English?
7. What problems do you have in using English? (e.g. problems of listening, speaking, reading or writing)
8. What do you do when you have problems communicating with someone in English?

9. What are you doing now to improve your English?
10. What research work are you doing at SUT?
11. When do you hope to finish your Ph.D at SUT?
12. What will you do when you finish your Ph.D at SUT?

### **Appendix B: Communication Tasks for the Pre-test, Post-test, and the Delayed Post-test**

**Explaining Feelings:** Students were asked to pick a word from a box (e.g., angry, frightened, jealous, lonely, happy etc.) and to explain to their partner its meaning without any actions, so their partner could guess what the word was.

**Explaining Instruments:** Students were asked to pick a word from a box (e.g., a computer, a coffee maker, a microwave oven, a water heater, a lift etc.) and to describe it to their partners without any actions, so that their partners could guess what the word was.

**Formulation of a Definition:** Students were asked to pick one technical word with a definition from a box (e.g., Seismology: the scientific study of recording earthquakes) and were asked to explain to their partner the meaning of the definition using their own words or to restate the definition in a different way.

**Making dialogues:** Students were asked to pick a topic from a box to make their own dialogues (e.g., My favourite food, My favourite football player, My favourite car, My favourite movie star, My favourite song etc.) and they took turns to ask and answer questions. The topics were adapted from the website of [onestopenglish.com](http://onestopenglish.com), [eduref.org](http://eduref.org) and [iteslj.org](http://iteslj.org).