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Utilising multimedia ESP programme in enhancing flight attendants' safety knowledge and problem solving skills

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Abstract

A multimedia English for Specific Purposes (ESP) programme was developed to train flight attendants. The programme comprised of two units. Unit one is listening comprehension, which provides the flight attendants' with specific information of Airbus A340. Unit two is reading comprehension, which provides the flight attendants with the emergency procedures. The effect of this programme on the flight attendants' safety knowledge and problem solving was measured using an achievement test which comprises two parts; the first part includes 10 multiple-choice questions based on listening comprehension and measuring safety knowledge; the second part includes 15 multiple-choice questions based on reading comprehension and measuring problem solving situations. The sample of the study consists of 36 flight attendants divided into two groups. The test was administered as a pretest and a posttest for the equivalence of the groups and their achievement. The results revealed that the computerised ESP programme has a measurable effect on the flight attendants' recall of safety knowledge and problem solving skills. The researchers recommended that similar computerised ESP programmes should be designed in order for the flight attendants to be well equipped with skills and knowledge in dealing with emergency problems that they may occur during flight.

Introduction

English is the mandated international language of aviation. As of 1 January 2008, all air traffic controllers and flight crews engaged in or in contact with international flights must be proficient in the English language (International Civil Aviation Organisation [ICAO], http://www.icao.int). As described by ICAO in its official website, anyone associated in the aviation industry would be considered as proficient speakers if, in a work-related situation, they are able to:

- communicate effectively (voice-only and face-to-face situations);
- communicate with accuracy and clarity;
- use appropriate communicative strategies to exchange messages and to recognise and resolve misunderstandings;
- successfully handle the linguistic challenges presented by a complication or unexpected turn of events; and
- use a dialect or accent which is intelligible to the aeronautical community.

Such emphasis has to be made since fatal accidents due to miscommunication involving limited English proficiency have been prevalent (Tajima, 2003). Tajima (2003) further suggests that more serious efforts must be put to create 'an error-resistance and mistake-free language environment for those non-native English-speaking pilots and controllers to avoid miscommunication' (p. 26). The new realisation on the need to emphasise on English proficiency of personnel in the aviation industry by ICAO 'stem from idea of the preservation of aviation safety' with the aim of 'keeping communication between pilots and controllers clear and effective without jeopardising safe operations' (Park & Kong, 2007, p. 1), as well as maintaining effective communication from the cabin crew to the flight attendants and vice versa, especially after the events of 11 September 2001 (Krivonos, 2007).

Attempting to enhance English language proficiency among the aviation personnel in the actual work environment would be ideal, but quite impossible and impractical. In this respect, the best testing environment would be in a simulation-based environment with the use of multimedia tools and relevant technologies (such as audio, video and animation) that would allow flight attendants to experience actual work setting on board (Bennett *et al.*, 1999). According to Bennett *et al.* (1999), the use of multimedia tools for testing that mirrors the actual settings would facilitate assessors in measuring problem solving skills and the related cognitive constructs far more efficiently and effectively.

Tajima (2003) also reckons that the field of English for Specific Purposes (ESP) and aviation is still an unexplored research area with a huge potential for language researchers. Similarly, Rhoden, Raltson and Ineson (2007) claim that the safety roles of flight attendants have received no attention in the academic literature. They argue that it is imperative that this group of professionals is well trained and equipped with skills and knowledge:

> Given that cabin crew take responsibility for millions of passengers annually, it is argued that the quality of the training delivered to enable them to undertake their safety role effectively is an important consideration for all air transport passengers and airline personnel. (p. 538)

The focus of this paper is on the flight attendants' language, whereby English is used for specific purposes ie, the need to understand specific terminologies and concepts related to aviation. Previous studies have examined the importance of the nexus between ESP and the aviation industry. Beech (1998), for example, makes use of the four language skills through activities that involve the flight attendants' interaction with passengers and specific information about aircrafts, where the exercises and tasks are based on role plays and on pair works. More recently, Strother (2006) has investigated the development of an online corporate training programme for specialised aviation content. In that training programme, a written test is conducted to assess the trainees' English language proficiency.

The need to research and develop a multimedia ESP programme to enhance flight attendants' safety knowledge and problem solving skills was prompted and justified by the organisation of the 2nd ICAO Aviation Language Symposium (IALS/2), which was held in Montreal, Canada (7–9 May 2007). The objectives were:

> ... to present models of implementation of the provisions and initiatives that support quality aviation language training and testing. The second objective is to provide participants with tools to develop implementation plans of the language proficiency requirements within their respective organizations (http://www.icao.int/icao/en/anb/meetings/ials2/index.html)

Computer-based multimedia environments and tools can lead to successful and effective ESP programmes. Their 'capacity to deliver and juxtapose all the traditional media of language learning alongside pedagogic tasks' (Brett, 2000, p. 269) can have positive implications for self-study as well as any form of classroom-based instruction, particularly for an ESP programme. In this current study, a multimedia ESP programme is developed, and experimented with the flight

attendants, particularly in situations where they are required to understand special terminologies that are critical to the nature of their job. The multimedia ESP programme gives attention to listening comprehension and reading comprehension, while testing the flight attendants' knowledge and skills in cabin safety. Hence, the aim of the study was to utilise the multimedia ESP programme to enhance flight attendants' safety knowledge and problem solving skills.

The research questions are:

1. Is there a difference between the mean scores of the experimental and the control group on safety knowledge that can be attributed to the use of the computerised ESP programme?
2. Is there a difference between the mean scores of the experimental and the control group on problem solving that can be attributed to the use of the computerised ESP programme?

Literature review

Many related studies highlight the deficiencies of flight attendants' training, especially in handling with emergency problems onboard (FSF Editorial Staff, 2003; Mahony *et al.*, 2008; Phillips, 1992; Rosenkrans, 2006). All these studies and reports underscore the need for better training especially in the significant use of ESP in training sessions that focus on listening comprehension and reading comprehension (Hutchinson & Waters, 1987). So far, the use of multimedia in training flight attendants is only limited to safety knowledge and description of aircraft cabins (JATS, 2007 and Proctor, 1994) and does not encompass the enhancement of understanding, retention and skills. Studies from other fields indicate that multimedia can be an effective mode to enhance understanding, retention and performance skills. Kaveevivitchai *et al*. (2009), for example, developed a computer-assisted learning online multimedia on vital signs for second-year nursing trainees in two schools. The results of the experiment show that the multimedia animation and audio enhance performance skills but did not enhance factual skills. Nevertheless, Kaveevivitchai *et al*. (2009) postulate that the realistic scenarios provided in the programme could enhance the ability of trainees to solve problems and to develop decision-making skills. This is because multimedia technology enables and supports simulations that accommodate and deliver various learning situations, contexts and materials. Learning experiences driven by the use of multimedia can facilitate and guide the students to become involved, both physically and cognitively, with the continuous instruction that is developed in their engagement with computers and other tools of multimedia (Richards & Klein, 1985). As a result, students are able to (1) interact better with the learning materials, work better in groups and the level of their understanding is increased (Tahboub, 2003); (2) develop students' cognitive-based tasks and motor skills (Wong *et al.*, 2009); and (3) become active autonomous learners, who take control of learning and the learning process (Johnson, 2009).

Dochy, Segers, Van den Bossche & Gijbels (2003) suggest that powerful learning environments that utilise technology and multimedia tools should be developed so as to facilitate the use of 'authentic, real life contexts that have personal meaning for the learners' (p. 534) and 'offer opportunities for distributed and co-operative learning through social interaction' (p. 534) that will enhance ones' general learning and thinking skills. Taking a leaf from the use of multimedia in problem-based learning, Tick (2007) stressed that by using role plays, students can be guided 'to a certain role within the framework of a given multimedia education software, in which they have to make strategic decisions and must undertake the positive and negative consequences of the decisions' (p. 369), and thus promote higher-order thinking skills, especially in the ESP context and multimedia use (Luzón, 2007). Many studies confirm that the use of multimedia in the context of ESP invigorate and enhance students' thinking skills. For instance, Herrington and Oliver (1999) investigated students' use of higher-order thinking in an interactive multimedia programme based on a situated learning framework. They conclude that a multimedia programme based on a

situated learning approach 'can provide a learning environment capable of supporting and maintaining substantial levels of higher-order thinking' (Herrington & Oliver, 1999, p. 3). In Dennis and Higgins's (2003) study of nursing students, the use of multimedia CD-ROM presented change in the students' thinking about caring for people, and they started to think, create and develop 'a plan of action for presenting outcomes of their learning to colleagues' (p. 5).

Apart from thinking skills, understanding and motivation of learners are increased with the use of multimedia in ESP contexts and learning programmes. Tsai (2009) developed an ESP courseware for semiconductor technology and examined its integration as a 'silent partner' into instruction. Tsai (2009) concludes that students demonstrated better participation and motivation, used the multimedia more and had a better understanding of the English content.

In the situated learning framework, it is postulated that the computer and its related technologies can provide an alternative to the actual and authentic contexts and settings, and that such technologies can be utilised 'without sacrificing the authentic context which is such a critical element' of situated learning (Herrington & Oliver, 1995, p. 3). In terms of this study, we have taken into consideration the following features of a situated learning environment that will increase flight attendants' useable knowledge: (1) integrate/include authentic context that reflect the way flight attendants will use the knowledge in actual emergency situations that require knowledge and problem solving; (2) integrate/include authentic activities (ie, reading and listening activities/items that are based on safety knowledge and problem solving skills); and (3) integrate and include aspects of learning assessments and evaluation within the tasks (Herrington & Oliver, 1995).

Methods

Participants

The population of the study is 500 flight attendants working in Royal Jordanian airline. All are above 18 years of age and have undergone the same training and safety courses related to the safety onboard the Airbus A340-200.

Research design

The subjects of the study consisted of two groups: one control group and one experimental group. It comprised 36 flight attendants chosen randomly. Each group comprises 18 flight attendants. The study is a quasi-experimental. The independent variable is the instructional programme, which is divided into two levels—listening comprehension lesson (A) and reading comprehension lessons (B). The dependent variable is divided into two levels—(A) recall of safety knowledge and (B) recall of problem solving skills. The multimedia ESP programme was developed using the Gagne's Nine Events of Instruction (Gagne, 1985) and are reflected in the content and structure of the multimedia programme (Table 1).

Instrument

The first author of this article developed the multimedia ESP programme using Visual Basic 6. The multimedia ESP programme was evaluated by three educational technologists to assess the appropriateness of the programme properties, and three English language experts to assess the appropriateness of the language.

An achievement listening and reading test was developed by the researchers. This test included two parts. The first part consisted two subsections: (1) 10 multiple-choice questions (measuring safety knowledge), and (2) 15 multiple-choice questions (measuring problem solving situations that require emergency procedures). Each situation is followed by a number of questions that lead to the solution of the problem. The second part of the test measured recall of skills, which made use of scenarios that could enhance ability to solve problems (Kaveevivitchai *et al.*, 2009). The test was validated by a manager and three supervisors from the In-flight Services of Royal

Table 1: Gagne's nine events of instructions

Instructional event	Internal mental process
1. Gain attention	Stimuli activates receptors
2. Inform learners of objectives	Creates level of expectation for learning
3. Stimulate recall of prior learning	Retrieval and activation of short-term memory
4. Present the content	Selective perception of content
5. Provide 'learning guidance'	Semantic encoding for storage long-term memory
6. Elicit performance (practice)	Responds to questions to enhance encoding and verification
7. Provide feedback	Reinforcement and assessment of correct performance
8. Assess performance	Retrieval and reinforcement of content as final evaluation
9. Enhance retention and transfer to the job	Retrieval and generalisation of learned skill to new situation

Figure 1: Home page of the computerised programme

Jordanian airline, and confirmed it was appropriate, easy in its form and clear in terms of what was required. English language experts also confirmed that the language used in the test was correct and proper. The test reliability was verified through the test–retest method on a group of 10 flight attendants (not from the actual study group), chosen randomly from the population. The period between the two tests was 2 weeks. The Pearson correlation coefficient computed for the test was 0.89, which was considered to be suitable for the purpose of this study.

Procedure of the multimedia ESP programme

The first page of the *Multimedia ESP Programme* is the home page (Fig. 1). It provides the flight attendants with both text and voice instructions on the programme.

The instructor displays the contents of Unit 1 (listening comprehension) and Unit 2 (reading comprehension) by clicking on the specified icon (Fig. 2). Unit 1 includes six listening comprehension lessons (Fig. 3), in which flight attendants are required to listen to and answer the questions that come at the beginning (consisting of review questions) and at the end of each lesson (consisting of evaluation questions).

Unit 2 includes four reading comprehension lessons (Fig. 4). In this part, the flight attendants are required to read the content of each lesson and answer the review questions that come at the

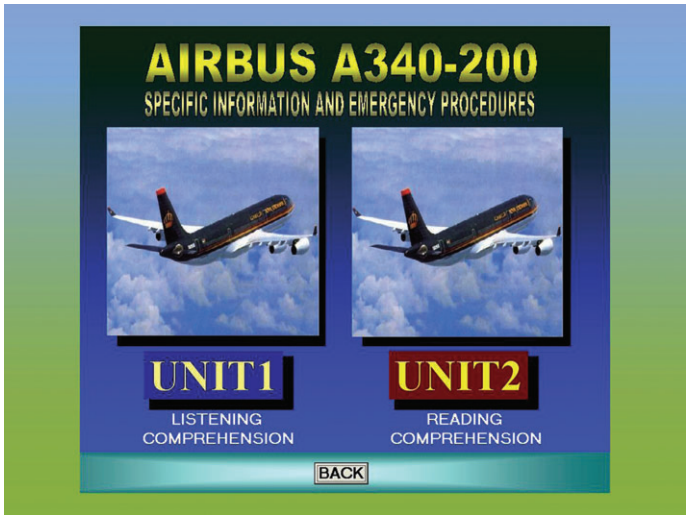

Figure 2: Units 1 and 2 of the computerised English for Specific Purposes programme

Figure 3: Contents of Unit 1 of the computerised programme

beginning, and the evaluation questions that come at the end of each lesson. Figures 5 and 6 are examples of the knowledge and skills that are required of the flight attendants in the case of fire emergency.

Description of the content of the two units

The multimedia ESP programme includes two units—listening comprehension and reading comprehension. An example from the first unit is listening comprehension lesson, which provides the flight attendants with specific information on 'Lavatories'. These pieces of information present the pre-flight check for the fire extinguisher in addition to the five signs that are activated in the cabin in case there is smoke in one of the lavatories. This unit requires the flight attendant to comprehend and to recall the safety knowledge, when needed. Unit 2 includes four lessons on reading comprehension. The first lesson is fire fighting. This emergency procedure demonstrates

Figure 4: Contents of Unit 2 of the computerised English for Specific Purposes programme

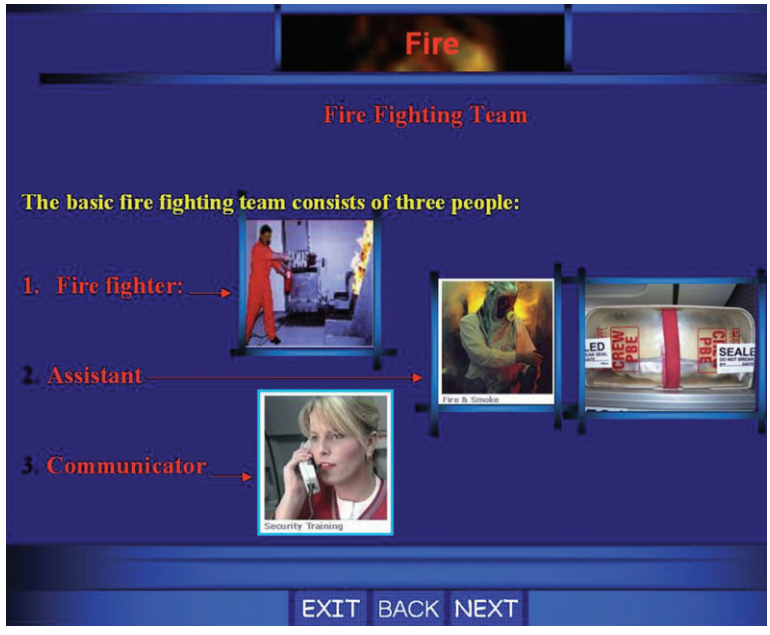

Figure 5: Contents of Unit 2: reading, fire fighting (a)

the roles of each member of the fire fighting team, and demonstrates the emergency procedures fighting and extinguishing fire effectively onboard the airbus A340.

Instructional method and duration for experimental and control groups

The instructor taught both the experimental and the control groups. He is a supervisor at the in-flight services and he has extensive knowledge of the content delivered to the control group. The first author in this study familiarised the same instructor of the experimental group on the content of the ESP programme. For the experimental group, the instructor started and projected

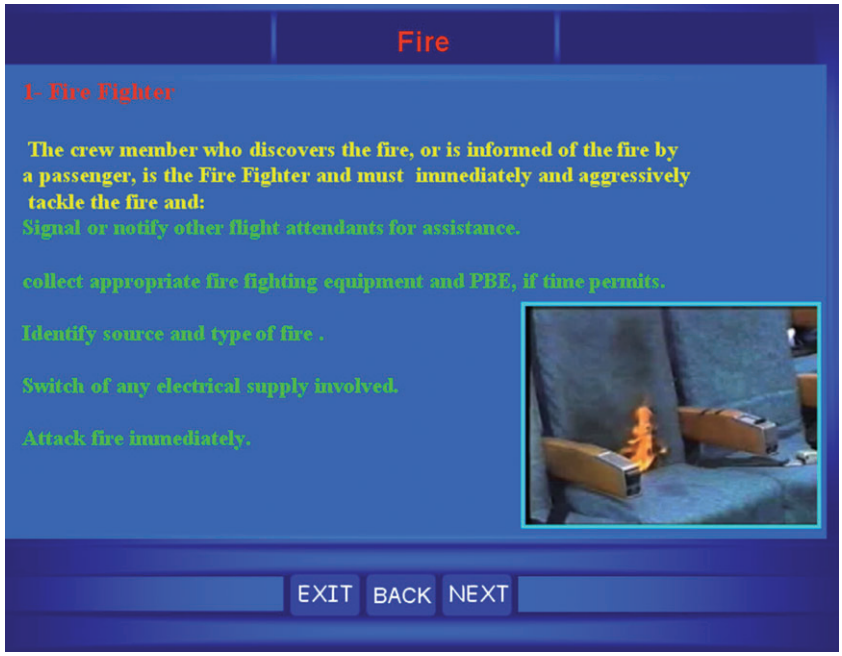

Figure 6: Contents of Unit 2 reading, fire fighting (b)

the multimedia ESP programme, and allowed the flight attendants to listen to the instructions provided at the home page. He then answered questions raised by the flight attendants. In the listening comprehension unit and the reading comprehension unit, the flight attendants answered the multiple-choice preview questions. Then, the flight attendants listened to the whole lesson in Unit 1 and read the reading comprehension lesson in Unit 2. At the end of each lesson, the flight attendants answered the 10 multiple-choice evaluation questions. At the end of the programme, the flight attendants were given their overall score (out of 100%) through the multimedia ESP programme.

The control group studied the same content of the experimental group that included the specific information of the Airbus A340-200 aircraft and the emergency procedures. But they did not use the multimedia EPS programme; their reference was the normal safety manual that the airline have been using previously. The instructor employed a lecture-style method, using the safety manual book to deliver the content for the control group. There would be question-answer sessions—anytime during the lecture and at the end of each lecture—in which the flight attendants are given the opportunity to ask questions, seek clarification and/or initiate discussions; and the instructor, would respond accordingly. These are the normal practices at the Royal Jordanian Airline.

The instructions from both groups were administered in the briefing centre of the Royal Jordanian In-Flight Services at Queen Alia International Airport. The achievement test was used as a pretest and as a posttest for both the experimental group and the control group. As for the experimental group, the instructor taught the programme for 30 minutes (each class) for three times a week for 2 months. Fourteen sessions were specified for teaching Unit 1 and 10 sessions were specified for teaching Unit 2. A total of 24 teaching sessions were allocated for the whole programme. The same amount of teaching time and period was allocated for the control group. A total of 24 teaching sessions were allocated for the control group-based on the contents of the safety manual book.

Table 2: Pretests for experimental and control groups

Pre	Group	*N*	*M*	Standard deviation	*t*	*df*	Sig. (2-tailed)
Safety knowledge	Experimental	18	33.00	1.910	–0.272	34	0.787
	Control	18	33.17	1.757			
Problem solving	Experimental	18	50.50	2.618	1.061	34	0.296
	Control	18	49.44	3.312			
Achievement test	Experimental	18	83.50	3.485	0.714	34	0.480
	Control	18	82.61	3.973			

Table 3: Posttest on safety knowledge

Post	Group	*N*	*M*	Standard deviation	*t*	*df*	Sig. (2-tailed)
Safety knowledge	Experimental	18	37.78	3.541	3.589	34	0.001
	Control	18	34.00	2.722			

Data analysis

In order to test the hypothesis of the study, a *t*-test was conducted to compare between the mean scores of the two groups. The independent variable in this study was the multimedia ESP programme and the dependent variable was the achievement test divided into two parts of safety knowledge and problem solving. The significance level is set at ($p <= 0.05$).

Results

Before administering the programme, both the experimental group and the control group sat for the same format of the pretest. Table 2 presents the results of the pretest for both groups. Mean scores for safety knowledge, problem solving and achievement tests for both the control and experimental groups are almost similar, indicating that there is not much difference between the two groups. It also indicates that both groups are similar in terms of their ability and knowledge in the aspects that are examined in this experiment (Table 2). This can be explained by the fact that the flight attendants in this study have passed through the same experiences and studied the same courses in the training centre (Phillips, 1992; Rosenkrans, 2006).

The *t*-value for the experimental and the control group on the safety knowledge is significant at 0.787, while and the *t*-value for the experimental and the control group on problem solving is significant at 0.296. The *t*-value for both groups in the achievement test is significant at 0.480. These show insignificances at ($p \leq 0.05$), which indicates that the two groups are equivalent in the safety knowledge and the problem solving in the pretest for achievement.

Posttests were also administered for both groups in order to test the hypothesis of the study. The results of the posttest were used to calculate the mean scores, the standard deviation, and the *t*-value in order to investigate if the multimedia ESP programme contributes to the recall of safety knowledge and problem solving skills by the flight attendants. To answer the first question, the following hypothesis was formulated: There is no statistically significant difference ($p \leq 0.05$) between the mean scores of the experimental group and the control group on the safety knowledge that can be attributed to the use of the multimedia ESP programme.

Table 3 shows that the calculated *t*-value for the experimental and the control group on safety knowledge is 3.589, which is significant at 0.001 ($p \leq 0.05$). This means that hypothesis is rejected, and explains that the experimental group enhanced their knowledge in safety knowl-

Table 4: Posttest on problem solving

Post	Group	*N*	*M*	Standard deviation	*T*	*df*	Sig. (2-tailed)
Problem solving	Experimental	18	56.61	3.310	5.102	34	0.000
	Control	18	51.39	2.810			

Table 5: Overall post test achievement

Overall	Group	*N*	*M*	Standard deviation	*t*	*df*	Sig. (2-tailed)
Achievement	Experimental	18	94.39	5.112	5.982	34	0.000
	Control	18	85.39	3.822			

edge after being taught using the multimedia ESP programme compared with the control group, who were taught using the conventional method. To answer the second question, the following hypothesis was formulated: There is no statistically significant difference ($P \leq 0.05$) between the mean scores of the experimental group and the control group on the problem solving that can be attributed to the use of the multimedia ESP programme.

The *t*-value for the experimental and the control group on problem solving is 5.102, which is significant at 0.000 ($p \leq 0.05$) (Table 4). This means that the hypothesis is rejected and clarifies that the experimental group enhanced their problem solving skills after being taught using the multimedia ESP programme compared with the control group, who were taught using the conventional method.

The *t*-value for both groups on the overall achievement is 5.982, which is significant at 0.000 ($P \leq 0.05$) (Table 5), which indicates that the two groups are not equivalent in term of their safety knowledge and the problem solving in the achievement post test This result implies that the experimental group clearly benefitted from the use of the multimedia ESP programme in enhancing their safety knowledge and problem solving skills that can be utilised during flights.

Discussion

The main purpose of this study was to investigate whether the use of listening and reading skills, presented through multimedia, could enhance flight attendants' ability to recall safety knowledge and their problem solving skills. The results indicate that such utilisation of multimedia and technology can raise the achievement level, specifically in terms of knowledge and skills, for flight attendants, as other studies in other fields have discovered (see Batchelder, 1998; Hamdy, 1989; Richard & Klein, 1985; Strother, 2006; Tahboub, 2003). By learning and experiencing the use of listening and reading skills in this study with the aid of multimedia and technology, the flight attendants in the experimental group were able to comprehend and recall better the safety knowledge. They were also able to perform better in terms of problem solving skills that were simulated in the programme compared with the flight attendants in the control group, who were just exposed to the conventional method of teaching and learning.

The experimental group performed better because the multimedia ESP programme assisted and influenced the way the flight attendants organise their learning tasks for intellectual skills according to complexity of the tasks, ie, in a hierarchical manner. These include stimulus recognition, response generation, procedure following, use of terminology, discriminations, concept formation, rule application, and problem solving. By following the hierarchy model that are embedded in the multimedia programme, the flight attendants were able to identify prerequisites, as well as the important concepts and ideas that should be understood, internalised and completed in

order to facilitate learning at each level, as Gagne (1985) recognised in his concept of learning conditions. As such, this kind of structured learning provides a basis for the flight attendants to learn and experience according to the sequencing of instruction that have been planned and arranged in the multimedia programme.

The positive uses and effects of multimedia have been the outcomes of many studies, where there are indications of improved students' achievement, attitudes and motivation (Alomary, 2006; Christenson *et al.*, 1998; Handy, 1989; Kaveevivitchai *et al.*, 2009; Little, 1990; Wong *et al.*, 2009; and Richard & Klein, 1985). The use of the multimedia in the computerised ESP programme might have impressed the flight attendants and consequently raised their motivation and positive attitude (Handy, 1989; Richard & Klein, 1985; Little, 1990). Another advantage of multimedia is providing the flight attendants with simulations of certain panels, equipment and systems, which make it easier for them to recall the safety knowledge required (Mecham, 1998; Richard & Klein, 1985; Tahboub, 2003; Alomary, 2006). Also, the use of the role play technique through multimedia may have elevated the ability of the flight attendants to solve the emergency problems related to different situations (Beech, 1998). Nevertheless, Ramsey (1996) argues that the use of multimedia alone is insufficient and it should be combined and supported with effective instructional system design. In this study, the use of multimedia is combined and supported with ESP-type instruction, which turned out to be significant and meaningful for the experimental group.

Kraus and Gramopadhye (1999) studied the effectiveness and applicability of computer-based multimedia team training for aircraft maintenance technicians, and identified some of the features of such programmes that were advantageous to the technicians. These features can be used to explain how and why the flights attendants in this study were able to perform better, in terms of gaining safety knowledge and problem solving skills, using the multimedia ESP programme. The first feature is standardisation, whereby the multimedia ESP programme provides a standardised, systematic and consistent instruction and curriculum to all the participants of the study, compared with the inconsistent and unsystematic lecture-style instructions given by the instructors. This inconsistency or unsystematic instructions is because the information was conveyed to the flight attendants according to the way it is perceived and intended by the instructors (Deimann & Keller, 2006). Second is adaptability, which refers to the multimedia ESP programme as a flexible learning tool that can be used at the flight attendants' own pace that encourages self-directed and autonomous learning and thus, has the ability to expand their 'capabilities and provide the basis for cognitive and meta-cognitive opportunities' (Lesley, 2008, p. 90). The integration and use of multimedia injects motivation to the flight attendants because the flexibility of the multimedia ESP programme 'provides the maximum advantage to the autonomous learner by providing good content, anytime availability, and connected content for mastery' (Lesley, 2008, p. 90). Recordkeeping is the third feature, where it tracks the flight attendants' progress by giving feedback in the form of answers to the questions. Such immediate feedback helps the flight attendants to identify any errors made, and help them mend their errors while their 'focus of attention is still on the item they have failed to answer correctly' (Banados, 2006, p. 539).

As for the flight attendants in the control group, their engagement with the content of the safety knowledge and problem solving skills was very little and limited ie, only during the lecture sessions conducted by the instructor. These sessions were very much instructor-led and did not encourage self-directed and autonomous learning. More importantly, these attendants in the control group were not aided with immediate constructive feedbacks, as experienced by their counterparts in the experimental group.

Conclusion

In short, the use of the multimedia ESP programme in this study enhanced flight attendants' safety knowledge and problem solving skills. This study affirms the potentials of multimedia

learning, with simulation and animation, in enhancing the application of skills in the workplace. However, multimedia in the form of instructional design alone cannot efficiently attain such desired outcome. In the context of this study, the multimedia was supported and integrated with an ESP learning programme that: (1) meets specific needs of the learners, particularly flight attendants; (2) makes use of underlying methodology and activities of the aviation discipline; and (3) takes into account the appropriateness of the language to the discipline's activities ie, aviation safety knowledge and problem-solving skills in the aspects of language such as grammar, sentences, lexis, discourse and genres (Dudley-Evans, 1998). Learning was successful for the flight attendants in this study as the reasons for their learning are determined by the content and the methods of the ESP programme (Hutchinson & Waters, 1987) ie, by using the ESP as an approach to enhance flight attendants' safety knowledge and problem-solving skills through reading and listening using multimedia tools.

Thus, we recommend that flight attendants should experience computerised or multimedia-driven ESP programmes. Such programmes can be used to supplement the initial training that pre-service flight attendants receive, as well as to enhance and refresh experienced in-service flight attendants' knowledge and skills. Such efforts would enhance their knowledge in cabin safety procedures and thus make better decisions when solving problems when they are faced with critical and even life-threatening situations.

The main limitation of this study is that the content of the multimedia ESP programme was limited to the specific information of the Airbus A340-200 aircraft and the emergency procedures taken from the Flight Attendant In-flight Safety Manual. The other limitation is that this study just examined a multimedia ESP programme that focused on only two language skills ie, listening and reading. Beech (1998), who made use of ESP language for the cabin attendants, emphasised the need to include all the four language skills (including speaking and writing that were not investigated in this study). Beech (1998) made use of the four language skills through the activities that involved the cabin attendants' interaction with passengers and the specific information of the aircrafts. Perhaps, future research should examine and observe the effects of a multimedia ESP programme—with all the four language skills (reading, writing, listening and speaking)—on the flight attendants in measuring their safety knowledge and problem solving skills.

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