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**Marketing Concept Comprehension
and Recall through Imagery –
The Case of International Students**

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Marketing Concept Comprehension and Recall through Imagery – The Case of International Students

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Abstract

Teaching new marketing concepts to international students (from non-native speaking backgrounds) poses particular challenges for lecturers. Specifically, assessment results reveal that Kotler's brand development strategies are poorly understood by international students undertaking a marketing principles course at an Australian tertiary institution. Students find difficulties in conceptualising the various brand development strategies via purely written and verbal description even when numerous examples are presented. Therefore alternative pedagogical strategies are required to enhance students' learning of particular marketing concepts.

An empirical study, drawing upon cognitive psychology theory, was undertaken to determine whether an intervention strategy of using greater visual cues enhances international students' understanding and recall of the brand extension concept. The study was conducted with two business diploma classes undertaking a first year university marketing principles course. The intervention class was taught the concept with diagrams using relevant pictorial cues. The control class was taught the same concept with diagrams alone. Both groups were tested for recall and understanding of the concept after one week.

Outcomes of student test results and survey questionnaires support the hypothesis that the addition of picture cues enhances students' comprehension whilst mitigating the cognitive load caused by English vocabulary deficits. Picture cues prompted greater connections with students' prior knowledge increasing meaning construction and the verbal and visual encoding enabled elaborate processing resulting in higher recall of the concepts. Students also reported the brand extension concept easier to recall when taught with imagery. These results indicate increased use of imagery can represent a cost-effective strategy to enhance student learning when demonstrating new marketing concepts to international students.

Keywords:

Corresponding Author:

Introduction

Teaching new marketing concepts to international students (from non-native speaking backgrounds) poses particular challenges for marketing lecturers. Specifically, assessment results reveal that the Kotler (2010) brand development strategies are poorly understood by international students undertaking first year marketing courses within a business degree program at an Australian tertiary institution. Students find difficulties in conceptualising the various brand development strategies via purely written and verbal description even when numerous examples are presented. Therefore alternative pedagogical strategies are required to enhance students learning of particular marketing concepts. This paper reports on an empirical study, based upon cognitive psychology theory, highlighting the advantage of adopting visual strategies to enhance comprehension and recall of the brand extension concept used in the teaching of marketing principles courses. The paper is structured as follows: the first section presents a review of the cognitive psychology literature germane to the study, the second section outlines the empirical study and research methods, whilst sections three and four present the results and discuss the findings. This is followed by a concluding section.

The Literature – Cognitive Psychology, Marketing and Educational Practice

Over the past three decades a burgeoning body of literature in educational psychology has emerged which focuses on understanding how the memory works to process new information and to assist in its recall. Interestingly, the discipline of marketing draws upon this research when developing communication strategies to increase consumer perception, encoding and recall of brand messages as memory is a major determinant of what consumers notice and ultimately buy (Sharp, 2013).

However the sensory memory and short term or working memory have limited capacity for incoming stimuli and so the memory structures (also known as schema), which represent categories and interrelations within long term memory to assist information storage and recall, are very important. The meaning of new information is constructed in working memory by applying the context and the learners existing memory associations, which reduce pressure on the memory to facilitate new memory encoding and storage (Anderson, 2010; Baddeley, 1986). Yet English as a second language (ESL) students often require extra processing because of their English vocabulary deficits. Working memory space can also become overloaded by anxiety when students do not fully comprehend the marketing academic language (Baddeley, 1986; Pressley, 1995).

Hummel and Nadolski (2002) explain that working memory load is also affected by the nature of the material, its presentation and the learner's effort. Thus educators should design their presentations to increase the germane

cognitive load, whilst reducing extraneous load to aid comprehension by releasing working memory capacity to assist in the processing and encoding of new information and the propagating of marketing concept schema. Therefore using tailored techniques to help students create new memory structures should assist them to elaborate these ideas in other circumstances, as elaborative more meaningful processing evokes higher levels of activation and is effective because it is better at driving the brain processes that result in successful recall (Anderson, 2010).

According to Paivio's (1986) dual coding theory, information is represented in two distinct systems and these independent verbal and imaginal codes contribute additively to memory. Learners' differing cognitive abilities lead to individual learning preferences for auditory or visual stimuli and as visual and auditory information is processed separately in working memory, presenting information in both modalities can reduce the processing pressure on a single mode by spreading the cognitive load (Baddeley, 1986; Mayer and Massa, 2003). Thus looking at picture diagrams can provide a visual scaffold that helps students construct the concept's meaning, which suits the likely visual preferences of international students (Mayer and Massa, 2003; Sternberg and Grigorenko, 2004).

Studies show that the same brain regions are used in perception as in mental imagery and imagery enables humans to construct objects in their minds and inspect them – these images can later be scanned in search of critical information. Further research states that it is more difficult to construct images from words alone and that memory for pictures is greater than verbal information (Anderson, 2010). However when explanations are also given whilst participants are studying pictures then better recall is achieved (Bower, Karlin & Dueck, 1975).

Studies show the brain reacts to meaning and encodes what is important to the individual. Therefore relevant processing leads to better memory links and the chance of recall, and people tend to remember category information which gives them the ability to predict (Anderson, 2010; Sharp, 2013). Thus, if international students are shown pictures in which they have prior knowledge and interest, the topic's meaning can compensate for their English language deficits to help activate their memory structures to guide attention so information can be more easily assimilated to create new knowledge.

All learning strategies should positively influence encoding practices with the goal to affect a learner's motivational state in the way they select, acquire, organise or integrate new information. Such metacognitive knowledge and use of strategies can compensate for the lack of relevant prior knowledge and English vocabulary (Schraw, 1998; Weinstein & Mayer, 1986; Zimmerman, 2002). Thus the use of visual cues can help ESL students become metacognitive to implement memory strategies that give them control over their processing and increase their motivation to learn (Borkowski, Weyhing & Carr, 1988; Mayer and Massa 2003; Sternberg & Grigorenko, 2004). This approach is very relevant for international students of marketing.

Innovative teaching methods should be implemented to aid international students to achieve the same degree of understanding of marketing subjects as local students. To this end a study using visual imagery strategy was incorporated into regular marketing classes and included cognitive and metacognitive instruction to determine whether the effect of pictorial cues on cognition and recall led to improved student test performance. Attention turns to this.

Empirical Study

Observations of ESL students with moderate English proficiency undertaking business diploma studies reveal limitations in their comprehension of particular marketing concepts. Past student results from a business college in Adelaide, South Australia offering first year university courses, showed the brand extension concept, typically taught in marketing principles courses was poorly understood and difficult to recall, prompting this intervention. This research draws upon the cognitive psychology field; primarily the limitations of working memory (Baddeley, 1986) and dual coding theory claims that verbal and visual input contribute additively to memory (Paivio, 1986).

Hypothesis: The addition of relevant pictorial cues when teaching the concept of brand extension to ESL students will increase comprehension, encoding and recall and thereby improve test results.

Method

To test the hypothesis two classes of business diploma ESL students studying a first year university level marketing principles course participated in the study. The intervention was designed as a small, rapid intervention module that easily fitted into the structure and process of the lecture. Both classes comprised 35 enrolled students.

The characteristics of both classes were similar in terms of ethnic origin, age (18-22 years), gender and English proficiency and the two groups were treated exactly alike in all ways except the specific teaching intervention.

The intervention class was taught the concept of brand extension with the addition of pictorial/diagram cues. The control class was taught the concept of brand extension with the use of diagram only cues. Both classes were taught (and tested) on the concept, in the standard weekly test, by the same instructor to maintain internal validity.

At the start of the class the instructor introduced the concept of brand strategies using PowerPoint slides adapted from the Kotler, et al (2010) Marketing textbook (see figure 1 below)

Figure 1. *Brand Development Strategies*¹

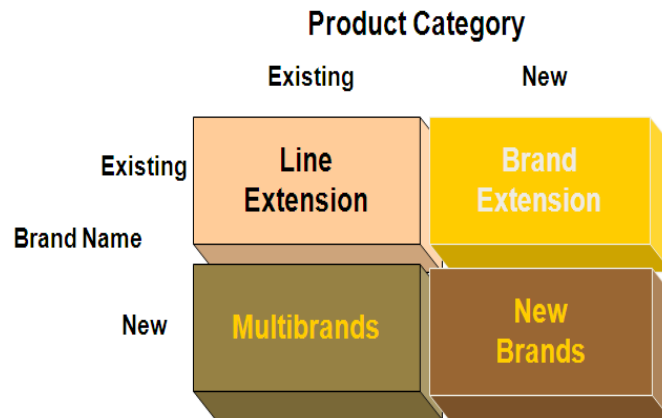


Figure 1 was used for both intervention and control classes to explain line extension, multibrands and new brands (in that order) with verbal examples. Brand extension (successful brand uses its existing name to launch a product into a new product category) was then explained in detail for greater understanding and rehearsal using specific PowerPoint (PP) slides for the intervention class Figure 2 and the control class Figure 3 (see Figure 2 & Figure 3). Figure 2 shows intervention class PowerPoint slides where pictorial diagram cues were used to explain brand extensions. Figure 3 shows control class PowerPoint slides where only diagram cues were given to explain brand extensions.

Chanel (PP1) and Honda (PP2) brand extension examples were used to interest and motivate the 18-20 year old females and males respectively. These relevant brands were chosen to assist meaning as students' interest and prior knowledge would help them elaborate the information to aid encoding.

The instructor then elicited student elaboration and rehearsal of the concept by asking "Now who can think of any other brands such as airlines that have successfully extended their brands?" (It was expected students would link the brand extension concept to Virgin Airlines). Then the Virgin example (PP3) was displayed to increase the students' self-efficacy for understanding the concept.

In both groups the Virgin Airlines slide remained on the screen for the instructor to then scaffold the students to use cognitive and metacognitive strategies to help encode the brand extension concept (Askell-Williams et al. 2011; Wyras et al. 2007). Students were supported to "Select" the information to be remembered; then "Relate" it to their prior knowledge; next to "Organise" the new information in memory by closing their eyes for 30 seconds to actively encode brand extension images and their meaning in their memory structures; and finally to "Check" the concept was understood by asking for clarification if required.

¹Adapted from Kotler (2010 et al, 318)

Figure 2. Intervention class Power Points

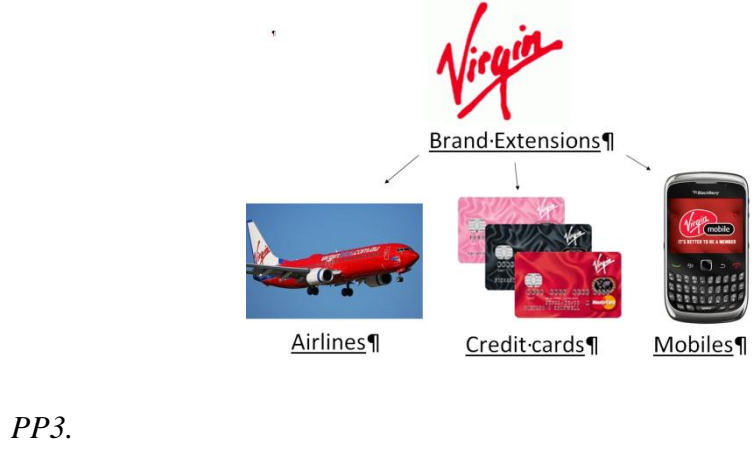
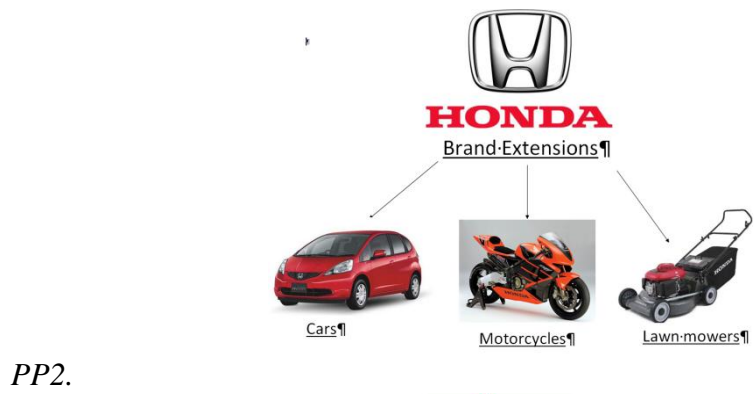
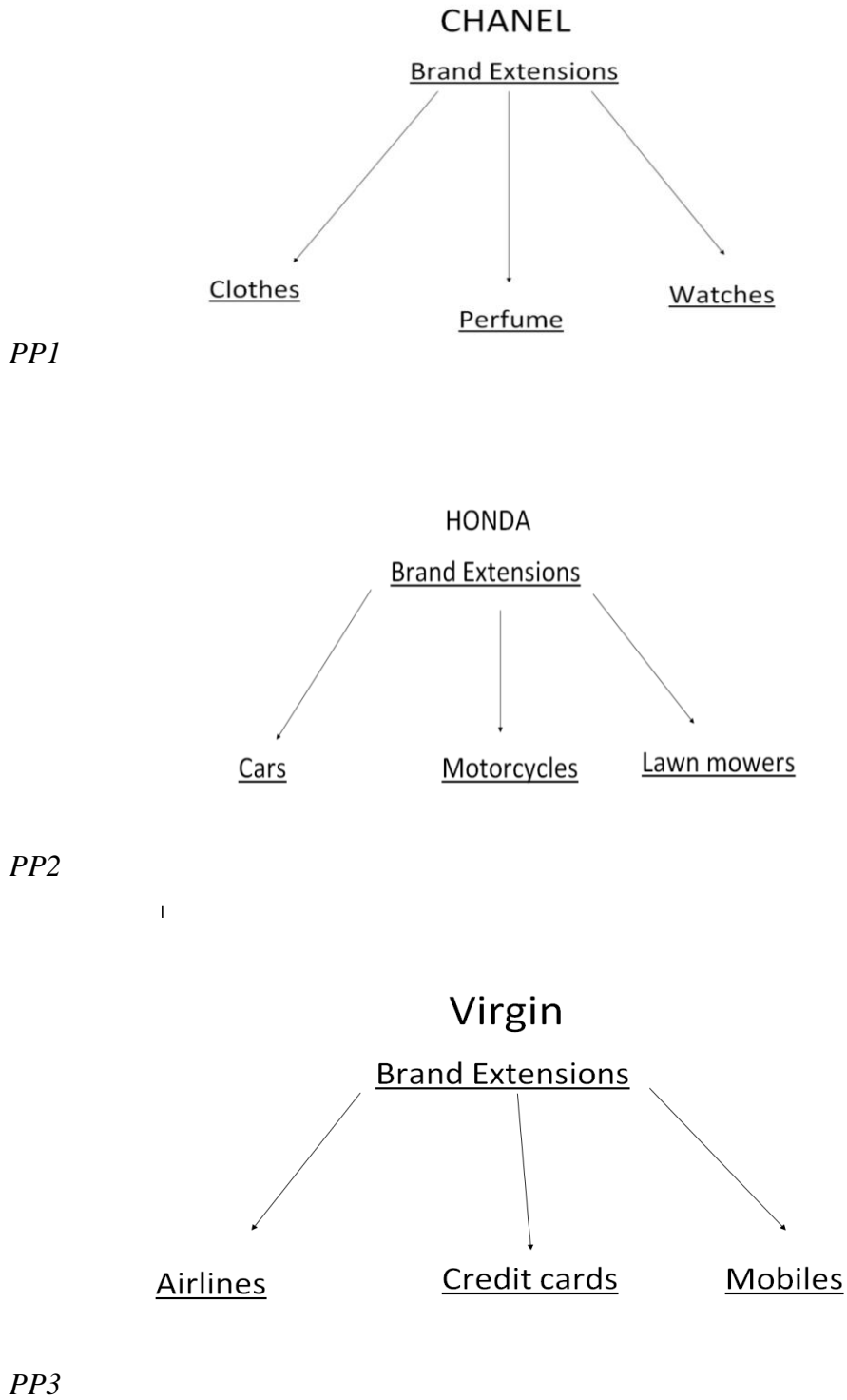


Figure 3. *Control class Power Points*



Measurement

There were two dimensions to measuring the effectiveness of the intervention. The first was the student quiz results, and the second was a Likert scale questionnaire. At the start of the following week's class students were given quiz questions to measure their recall and understanding of the brand extension concept. This was a standard weekly quiz which forms part of the overall assessment and it used the same assessment structure and process as other weeks. The intervention and control class were given the same test. (All quizzes were worth 1% of the course grade, which incentivises students).

Quiz questions:

- Q1 Explain what a Brand Extension means. (2 marks);
- Q2 Give an example. (1 mark);
- Q3 What does a brand need to launch a successful Brand Extension? (1 mark);
- Q4 Name one advantage of a Brand Extension (1 mark).

Question 1 primarily tested the students' recall of the brand extension concept whilst questions 2, 3 and 4 primarily tested the students understanding of the concept.

Likert scale questions:

In addition to the quiz a Likert scale survey was given in both classes to assess students' attitudes to the cognitive teaching strategies used in the research. The first question measured whether students who received pictorial diagrams believed the strategy to be more helpful than the students without pictures in their diagrams. The second (common) question measured the worth of the thirty seconds given to actively placing the brand extension concept in memory. The two sets of Likert scale questions are below.

Intervention class Likert scale questions:

Seeing the diagram with picture examples helped me remember what a Brand Extension means.

Strongly agree -----1-----2-----3-----4-----5-----6-----7 strongly disagree

Thinking about a Brand Extension for thirty seconds helped me remember the concept more.

Strongly agree -----1-----2-----3-----4-----5-----6-----7 strongly disagree

Control class Likert scale questions

Seeing the diagram with examples helped me remember what a Brand Extension means.

Strongly agree -----1-----2-----3-----4-----5-----6-----7 strongly disagree

Thinking about a Brand Extension for thirty seconds helped me remember the concept more.

Strongly agree -----1-----2-----3-----4-----5-----6-----7 strongly disagree

A quantitative analysis of the Quiz and Likert questionnaire results was performed using standard statistical tests (chi-square and t-tests).¹

Results

Two sets of quantitative data were collected, at the start of class, one week after the intervention: the quiz results and the Likert scale questionnaire. Results from both data support the hypotheses that the addition of pictorial cues for International ESL students aids understanding, encoding and recall, thus improving learning outcomes.

In the intervention group (Class 1) thirty eight students completed the quiz however the answers from the three students who were absent for the previous week's intervention were discarded. In the control group (Class 2), thirty three students participated in the study however only twenty five students were present in the following week to undertake the quiz.

Quiz Results

The students' qualitative quiz answers were marked for recall and understanding of the brand extension concept, thus marks were awarded for meaning despite grammatical deficiencies. The quiz answers were independently checked by the second course lecturer to ensure accuracy and marking integrity. Quiz marks for both groups are presented in Table 1.

Table 1. Quiz Questions

	<u>Same name</u> <u>Q1a</u> 1 Mark	<u>New category</u> <u>Q1b</u> 1Mark	<u>Example</u> <u>Q2</u> 1 Marks	<u>Brand need</u> <u>Q3</u> 1Mark	<u>Advantage</u> <u>Q4</u> 1 Mark	<u>Overall Total</u> <u>(5 marks)</u>
Intervention Group (N=35)	20	20	18.5	23	21.5	103
Mean score	0.57	0.57	0.53	0.66	0.61	2.94
Control Group (N=25)	9	7	5.5	8	11	40.5
Mean score	0.36	0.28	0.22	0.32	0.44	1.62
Statistical Significance	P < .05	P < .01	P < .01	P < 0.01	P < 0.09	P < 0.003

Table 1 details the overall total mean mark for Class 1 (intervention group) is 2.94 compared to the mean mark for Class 2 (control group) of 1.62. This striking difference is statistically significant at 99% (P < .003) using a one-

¹All statistical analysis was performed using Microsoft Excel 2010 statistical software package.

tailed (independent) t-test and demonstrates that the use of pictorial cues in the Class 1 intervention treatment had a significant positive effect on recall and understanding of the brand extension concept.

Moreover, the mean score of each question was higher for Class 1 than for Class 2. Question 1a and 1b measured recall of the brand extension concept and the Class 1 mean for Question 1a was 58% higher than the Class 2 mean. The Class 1 Question 1b score was 103% higher than Class 2's score. The scores on the recall questions then impacted on the Question 2, which tested understanding, by requiring an example of a brand extension. The Class 1 mean for Question 2 was 141% higher than that of the Class 2 mean. This result seems logical because if students have difficulty in recalling the brand extension concept then providing an example of the concept is unlikely. Each of these differences were statistically significant at 99% (qu. 1b, and qu. 2) and 95% (qu. 1a).

Class 1 means for the understanding questions 3 and 4 were 106% and 39% higher than the respective means for Class 2. These results were statistically significant at 99% (qu. 3) and 90% (qu.4) using a one tailed t-test. The improved relative performance of Class 2 (although still lower than the intervention group) in these questions can be attributed to the broadness of these questions. As these questions were less specific than questions 1 and 2, general answers on business needs and advantages were rewarded with marks if they made sense.

Although there was some difference in the gender balance between the two classes there was no statistical difference in the mean results between male and female in both classes 1 and 2. Hence the gender differences across classes had no impact in effecting overall performance scores.

Likert Scale Results

These measures were used to determine students' attitudes to the intervention learning strategies and were not part of the assessment process. Likert scale questions are routinely used in course evaluations so the students were familiar with this type of attitude measurement. These paper based scales were distributed following the collection of the quiz results in both classes. To ensure true responses, these questionnaires were anonymous. In total only five students did not complete the Likert scale questions, which is a pleasing response as no marks were attached to their submission.

Table 2a. *Likert results for Intervention Group Class 1: question 1*

Seeing the diagram with picture examples helped me remember what a Brand Extension means.								
Strongly agree	1	2	3	4	5	6	7	Strongly Disagree
Frequency	12	11	1	5	2	1	0	
% of total	37.5%	34.5%	3.1%	15.6%	6.2%	3.1%		

*Three students in Class 1 did not complete this Likert scale question

Table 2b. Likert results for Intervention Group Class 1: question 2

Thinking about a brand Extension for thirty seconds helped me remember the concept more.								
Strongly agree	1	2	3	4	5	6	7	Strongly Disagree
Frequency	7	8	6	10	1	0	0	
% of total	22%	25%	19%	31%	3%	0	0	

*Three students in Class 1 did not complete this Likert scale question

Table 3a. Likert results for Control Group Class 2: question 1

Seeing the diagram with examples helped me remember what a Brand Extension means								
Strongly agree	1	2	3	4	5	6	7	Strongly Disagree
Frequency	0	5	11	6	2	1	0	
% of total	0	21%	44%	24%	8%	4%	0	

Table 3b. Likert results for Control Group Class 2: question 2

Thinking about a Brand Extension for thirty seconds helped me remember the concept more.								
Strongly agree	1	2	3	4	5	6	7	Strongly Disagree
Frequency	0	4	6	10	3	0	0	
% of total	0	17%	26%	44%	13%	0	0	

*Two students in Class 2 did not complete question 2 of the Likert scale

The above Likert scale results clearly demonstrate strong differences in students' attitudes between Class 1 and Class 2 regarding the value that the diagrams had in helping them remember the brand extension concept. Similarly, Class 1 and Class 2 differed markedly in how much they valued the diagrams in assisting them to make images to remember the concept.

From Table 2a above, for Class 1, 72% of the students responded *Strongly Agree/Agree* that the diagram with picture examples helped them remember the brand extension concept. In contrast, for Class 2, (Table 3a) only 21% agreed that the diagram with word examples helped them remember what the concept meant. Clearly the diagram with picture examples aided students to encode and recall the concept more than the diagram with word examples only.

Similarly, Table 2b reveals that for Class 1 (responding to question 2) 47% *Strongly Agree/Agree* that the 30 seconds of thinking about the brand extension concept helped them remember whilst the remainder of the students (53%) were unsure of this activities worth as their responses were between 3 and 5. However in contrast, Table 3b shows Class 2 students were largely unsure of the activities value as 83% chose between 3 and 5 on the scale, with only 17% of students responding, *Agree*.

Overall, the intervention group reported the diagram with picture examples and the use of cognitive strategies were more useful in helping them remember

the brand extension concept than did the control group who viewed the diagram without pictures.

Chi-square tests reveal that the frequency distribution between Class 1 and Class 2 for questions 1 and 2 were statistically different (at 99% and 95% respectively). Similarly, when combining the two questions, the differences in the frequency distribution between the two classes were statistically significant at 99% ($p < .001$).

Discussion

The results of this study strongly support the hypothesis that using relevant visual cues aids comprehension, encoding and recall for ESL business diploma students. Importantly this offers a successful teaching strategy that compensates for students' English language deficits as using an embedded visual support device aids meaning construction and increases students' inclination to comply with the task (Hummel & Nadolski, 2002). The study's design incorporated brands that interested students to improve their perception, attention and persistence. The Chanel, Honda and Virgin examples provided relevant links with students' prior knowledge to activate their memory structures and help assimilate the new concept information. This strategy improved memory, supporting previous research demonstrating that interesting and meaningful processing aids memory performance (Anderson, 2010).

The pictorial cues also increased students' understanding of the concept by utilising their limited working memory capacity primarily for meaning construction. These findings concur with cognitive load theory as the picture examples used less working memory space for English language decoding thus releasing working memory capacity to be involved in understanding and encoding the new information. Thus the pictorial cues optimised the students' memory space to both process information and propagate new memory structures at the same time (Baddeley, 1986; Hummel and Nadolski, 2002, Mayer and Massa, 2003).

The intervention class score was almost double the recall of the control group reinforcing Paivio's (1986) dual coding theory claim that individuals represent information in verbal and imaginal systems and that these two independent codes contribute individually to memory. Also these results replicate research showing explanations coupled with pictures give better recall and that it is difficult to construct images from words alone (Bower, Karlin and Dweck, 1975; Anderson, 2010).

Intervention class students performed better in all measurement categories because the picture examples compensated for the extraneous cognitive load, caused by the concept's English language complexity, so helping them to understand the meaning of brand extensions. The students' prior knowledge, their interest in the brands and the richness of the picture cues enabled them to activate their memory structures to incorporate this new chunk of category information. Also when viewing the picture examples, the students were

encoding the information both verbally and visually which contributed additively to memory.

In the quiz, the intervention students could scan their enhanced memory structure for the brand extension image and reconstruct the memory links that Chanel made clothes, perfume and watches. Thus they could recall that a brand extension meant different product categories using the same brand name. This reconstructive cognitive process was less available for Class 2 as the results demonstrate.

The results of Question 2 showed a pleasing amount of elaboration of the concept with the intervention class outperforming the control class by 141%. Although students used the examples provided many students also activated their memory structures and demonstrated elaboration by giving novel examples such as Samsung, Apple, and Google. These examples indicate students made connections to their prior knowledge to generate new examples of the concept (Weinstein & Mayer, 1986). In contrast the control class, who only saw word diagrams, were less able to create images in their minds and so less able to scan images for information on the concept to provide examples.

Question 3 results proved pleasing for the intervention class as this was the highest overall score with 66% of students answering the question correctly. This question aimed to measure understanding of the concept and this class gave strong answers such as “loyalty, reputation, famous, influence” that showed they understood the requirements for a brand to launch a successful brand extension. In comparison the control class were unable to articulate this understanding and scored less than half the marks of the intervention class. It is postulated that the picture cues instilled stronger images in students’ minds that enabled them to scan their images of Chanel, Honda and Virgin and reason that they are famous and reputable to a greater extent than the control class where the word cues were not as easy to image (Anderson, 2010).

The wording of Question 4 which asked for advantages of brand extensions could have been more specifically related to brand extensions. As the control class were less able to understand or recall the brand extension concept they relied on gaining marks with generic business answers such as “increase sales, expand market, attract consumers”. Whilst these can also be advantages of brand extensions the quiz was seeking answers more specific to the concept, however all meaningful answers were awarded marks to avoid prejudice. This may explain why question 4 was the highest mean for the control class.

The Likert scale questions measured students’ attitudes to the research’s learning strategies. Students’ responses highlighted the superiority of pictorial cues in aiding memory. Question 1 required students’ to think meta-cognitively about the visual strategies used and whether these strategies positively influenced their learning and memory. The results clearly indicate that students believed diagrams with pictures were superior to diagrams without pictures in aiding understanding, encoding and recall.

Likert scale Question 2 asked students to think meta-cognitively about the effectiveness of taking thirty seconds to actively encode the information by

placing an image of the diagram in their memory. Consistent with the hypothesis, students in the intervention class believed the picture diagrams helped them remember the brand extension concept to a far greater extent than the control class who saw diagrams alone. These results indicate that it is easier to put an image in memory with pictures rather than with a diagram using words alone.

The Likert scale results corroborate the quiz results and together these findings support the hypothesis that pictorial cues can enhance comprehension, encoding and recall for ESL students. Furthermore it is envisaged this research exercise could motivate students to become metacognitive to further understand their learning strengths and weaknesses and utilise visual imagery to aid their memory for new information (Baddeley, 1986; Paivio, 1986; Mayer & Massa, 2003; Sternberg & Grigorenko, 2004).

Conclusion

In the current educational climate of demand for improved learning outcomes underscored by government fiscal constraints the use of pictorial cues as an aid to cognition represents a cost effective method of teaching a variety of new marketing concepts. Although this study was conducted with international students in the area of marketing it is believed the results have external validity for educators of other disciplines and students regardless of their language. With the rapidly changing technological environment students are increasingly utilising visual and pictorial means to interact with information. It is up to educators to adapt their teaching strategies to benefit the needs of their students. Using more pictorial cues to aid understanding, encoding and recall is an opportunity that should be more fully exploited. This study demonstrates the success of adopting such an approach and prompts further studies in the area, such as the effectiveness of adopting modern digital technologies to facilitate the use of pictorial cues as a learning device.

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