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Listening Comprehension Strategies of EMI Students in Turkey

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Abstract

This chapter discusses the issue of English as medium of instruction (EMI) at higher education, reporting specifically the results of a listening comprehension strategy survey and qualitative comments to open-ended questions. The study was conducted at three universities (two state, one private), conveniently sampling 76 students (30 male, 46 female) from four non-English-related departments such as Business Management (n=38), Electronics and Communication Engineering (n=15), Agricultural Biotechnology (n=12), and International Trade (n=11). The results of the questionnaire showed that of 32 items, students stated 24 items (median rating=4) generally reflect what they do during the lecture to comprehend it, while another eight items received an overall median rating of 3 (neutral). As to differences, the study found statistically significant differences between male and female students for some strategies that they use, between full EMI and partial EMI groups, among grades, and major/department, as well as finding a statistically significant relationship of students' general GPA scores to some questionnaire items. The qualitative results also favored the items in the questionnaire, revealing that students used many strategies while listening to their lecture, notably focused on the lecturer, took regular notes in a good shape, and came to class prepared. At the end of the chapter, some important implications are given to both students and lecturers in EMI context, and suggestions are made for ongoing research studies.

1. Introduction

Since the 1990's, the European Commission and the Council of Europe have encouraged pluriculturalism and plurilingualism to 'motivate and produce a highly skilled plurilingual, pluricultural workforce.' (Coyle 2008, p. 99). After the Bologna Declaration was signed in 1999 to make degree programs of European universities standardized and appealing to internationally mobile students, there has been an increasing shift towards English medium courses/programs. In response to this development, the EMI research centre was founded at the University of Oxford in 2014. This centre 'conducts research into English as a Medium of

Instruction and develops and teaches professional development programs for teachers and lecturers' (Dearden 2014, p. iv) by cooperating with schools/colleges or higher education institutions around the world.

The main reason for institutions (chiefly universities) to adopt EMI is to attract international students endeavouring to gain an advantage in the competitive employment market. In addition, participation of foreign students and teaching staff was thought to increase internationalization of curricula at the universities. The adoption of EMI, however, has not been without its problems (Macaro, Akincioglu, and Dearden 2016). Many students in EMI courses struggle with the task of learning content through a foreign language (Smit 2008), since the course content itself is often quite challenging (Hellekjær 2010; Mulligan and Kirkpatrick, 2000).

2. Previous Studies

Over the years, English as a medium of instruction has gained popularity in Turkey, and there have been a number of studies relating to its use. For instance, Kılıçkaya (2006) compared lecturers' (n=100) views on English-medium instruction to Turkish-medium instruction at eight universities in Ankara, Turkey. Questionnaire results revealed that lecturers generally favoured "the idea of adopting Turkish as an instructional medium rather than English" (p. 8) because, according to them, the mother tongue can help students reach a deeper understanding and pass examinations in Turkish.

Students' motivation and perceptions of studying in an English-medium university was investigated with 203 university students at Çukurova University, Adana, Turkey (Kırkgöz 2005). A questionnaire was given to the first and final year students who were studying in EMI programs (Mechanical Engineering, Electric and Electronics Engineering, and Economics and Business Administration). According to the results, the students were found to have a fairly positive self-assessment of their English proficiency, reporting that they felt good at reading and listening but not so good at speaking and writing. Although they had 'mainly instrumental orientation towards long-term (post study) goals' (p.116), the students still reported 'detrimental effects of learning subjects through another language such as a feeling of being distanced from their native language and culture' (p. 101)

Working on a curriculum renewal project for adult learners of EFL in Çukurova University, Turkey, Kırkgöz (2007) included over 1000 participants in the study. Among the participants, 650 students who were studying EAP at the time of the project were given an

evaluation form; 82 students who were about to complete the EAP program, 120 past EAP students and 15 subject instructors were interviewed; and 220 past EAP student were given a questionnaire. Findings revealed that students need more challenging materials, more productive learning, autonomy through more challenging out-of-class tasks, better prepared content based materials, and help with acculturation to prevent the initial culture shock experienced.

In a later study, Kırkgöz (2009a) investigated students' and lecturers' perceptions of the effectiveness of foreign language instruction in an English-medium university. The participants were 15 lecturers and 220 students from Çukurova University, Turkey. The instruments used were a questionnaire, semi-structured focus group interviews with students, and interviews with lecturers. The findings revealed that students perceive their own proficiency low or somewhat effective and reported that the skill-based curriculum for English for academic purposes (EAP) is "inadequate in preparing students effectively for their academic requirements" (p. 92) because skills acquired in EAP are not always transferable to their academic classes. Lecturers likewise reported the inadequacy of the EAP curriculum. Thus, Kırkgöz suggests an approach which "constitutes a shift in emphasis from a skills-based curriculum to a discourse-community driven philosophy" (p. 92).

A study to find perceived reasons for success and failure of prep year program students (n=158) at Anadolu University was conducted by Taşkiran (2010). Participants were given an open-ended questionnaire, and it revealed that most students (58%) considered themselves unsuccessful. They referred to 372 causes, the most frequent of which was school/program/system, followed by unsuccessful teachers, lack of effort and lack of strong educational background. The most frequently reported reason for their success, however, was personal effort.

In Korea, Byun et al. (2011) argued that EMI is viewed as 'a major instrument for innovation in terms of internationalization' (p. 432), as well as an important contributor to competition among Korean universities. Therefore, Byun et al. aimed to describe the state of EMI in Korea. Survey data and data from interviews held with 10 lecturers and 19 students showed that although the participants had positive feelings towards EMI, students were still found to have difficulty following lectures because of "compulsory enforcement of EMI without regard to students'/instructors' language proficiency" (p. 447). Lecturers also bemoaned "the lack of a much-needed support system" (ibid., p. 447).

A longitudinal study in Hong Kong by Evans and Morrison (2011) explored language-related challenges that first-year students face in an EMI program at the Polytechnic University. Over three years, data came from semi-structured interviews with 28 students, as well as a questionnaire completed by large number of students (n=3009). The results showed that students had problems ‘understanding technical vocabulary, comprehending lectures, achieving an appropriate academic style and meeting institutional and disciplinary requirements. (p. 198). However, the study also found out that the students dealt with their daunting challenges, especially ‘through a combination of strong motivation, hard work, effective learning strategies’ (p. 206). Evans and Morrison also suggest that ‘students’ experience of studying in English prior to admission’ (p. 206) to an EMI program should be considered both by subject teachers and language teachers.

In the United Arab Emirates, Rogier (2012) explored the question of whether language proficiency of EMI students (n=59) increases over four years of EMI education, comparing the results to what lecturers (n=161) believe. Although both students and lecturers thought ‘EMI at the university level in the UAE is necessary for students to be able to compete in a global world’ (p. 122), differences occurred in ‘perception between students and faculty members regarding language ability’ (p. 122); while students reported their language proficiency is good or excellent in four skills, lecturers reported that learners’ proficiency was not good enough, especially in writing and listening.

The expectations of EMI lecturers from a prep year program at two universities in Turkey were investigated by İnan, Yüksel, and Gürkan (2012). A questionnaire was given to 85 EMI lecturers from a variety of departments. The findings revealed that lecturers gave greatest importance to reading and writing, especially to reading as it helps ‘to understand all kinds of written material related to their field’ (p. 3170). As to writing, lecturers at both universities expected students to ‘prepare presentations in their courses and write short paragraphs during their exams’ (p. 3170).

A study was conducted by Kırkgöz (2013) to explore first and final year students’ (n=151) approaches to learning in an English-medium higher education (Mechanical Engineering, the Electrics-Electronics Engineering, and the Departments of Economics and the Business Administration). A questionnaire was given, and interviews were held (n=48). The results showed that first year students have a tendency towards surface learning while final year students have a tendency towards a mixture of surface and meaningful learning depending on various factors, one of which was English medium of instruction at higher

education level. Both first (n=66) and final (n=68) year students saw English medium instruction as “an obstacle to learning disciplinary knowledge” (p. 36) and to understanding their lecture(r)s in the class.

At Alfred Nobel University in Ukraine, Tarnopolsky and Goodman (2014) investigated the degree to which English as a medium of instruction allows for the use of Ukrainian (the state language) or Russian (the predominantly spoken language). Field notes, audio-recordings, video-recordings for nine months in EMI courses and semi-structured interviews and informal conversations with 30 students and teachers revealed that both students and teachers recognize at times the importance and inevitable nature of using mother tongue ‘for the purposes of aiding comprehension’ (p. 393), thus arguing that the allowance for the use of two languages in EMI classes shows their ‘current and future strength in the language ecology.’” (p. 395).

The perceptions of 157 EMI students (93 local and 64 foreign) at Southern Taiwan University of Science & Technology were explored by Huang (2015), using a questionnaire to survey students’ learning motivation, learning anxiety, and learning achievement, and conducting focus group interviews with eight volunteer students. The findings revealed that although most students were found motivated to take EMI courses, local students were still anxious due to their low English proficiency, and they experienced ‘stress from the content comprehension as well as from peer competition’ (p. 77). Huang therefore suggests teaching effective comprehension strategies that students with a low level of English can use, which will further improve those students’ confidence and motivation to complete EMI courses.

Turkish university students’ orientation towards English and its use as a vehicle for academic studies was investigated by Karakaş (2015). Altogether, 351 undergraduate students from Boğaziçi University (n=106), Bilkent University (n=132), and Middle East Technical University (n=113) were first given a questionnaire, of whom another 20 were later interviewed. The study showed that native speaker competence is popular among students in terms of written and spoken English, with a stronger orientation to native-like writing than speaking.

We can see from the studies summarized above, that EMI presents a number of challenges for both students and teachers in many different locations around the world. Especially salient among these challenges is the difficulty experienced by students with a low level of proficiency in English who are not able to cope with listening comprehension (e.g. Byun et al.

2011; Evans and Morrison 2011; Kırkgöz 2013). The research questions addressed in this study were therefore as follows:

- 1 What listening comprehension strategies do EMI students in Turkey use?
- 2 Does strategy choice depend on gender, context, class, major, and general GPA scores?
- 3 What do students frequently report about their strategy use?

3. The Study

This study sought to discover what strategies EMI students generally use to comprehend lecture(s) more effectively and whether there is a significant difference in the strategy use between gender, context, classes (e.g., freshman, sophomore etc.), and major (international trade, etc.). In addition to exploring any relationship between questionnaire items and students' general GPA scores, the study also aimed to find qualitative data, and thus to reveal what the students generally do during the EMI lecture by asking them to write their opinions to the items in the questionnaire. Therefore, the study reported in this chapter will give both the results of a listening comprehension strategy survey and students' comments on the items.

3.1. Setting and Participants

This study was conducted at one private and two state English medium universities, in Turkey. Data came from 76 students (30 male, 46 female) in four non-English-related departments such as Business Management (n=38), Electronics and Communication Engineering (n=15), Agricultural Biotechnology (n=12), and International Trade (n=11). The students were selected according to convenience factors such as timetabling, students' classes, and legal permissions. All grades (Freshman=23; Sophomore=12; Junior=23; Senior=18) participated and they were at an average age of 18. None of the students were native-speakers of English – all were native speakers of Turkish, and therefore all had received an English prep year program before getting into the faculty of their choice.

3.2. Data Collection

Data collection occurred in two stages. First, a preliminary study was run to develop a listening comprehension strategy questionnaire; second, the questionnaire developed was used to collect data for the main study.

In the first stage, before collecting data for the main study, in order to develop a listening comprehension questionnaire for an EMI context, a preliminary study was conducted during

which students were asked to write about the listening strategies they used to follow their lectures/lecturers more effectively. The data were transcribed and analyzed for the most common strategies used by the students, which were included in the strategy questionnaire to be used for the main study.

In the second stage, after listening comprehension strategy was developed, the first and the second author piloted the questionnaire with ELT students, and then three universities were visited to collect data for the main study. Prior to distributing the questionnaire, all the students (n=76) were informed about the study, that they were free to leave any time without responding to the items, and that the results would not influence their grades. All agreed and signed the consent form.

3.3. Data collection Instruments

A questionnaire (see Appendix A) was developed with 37 items based on the data analysis of the preliminary study. To be able to extract students' reflections, they were asked to rate according to whether the items reflect what they do during the lecture (1=always untrue of me; 5=always true of me). To add a further qualitative perspective to the study, in addition to the ratings, students were also asked to write their comments or to respond to structured open ended questions in the column provided in the questionnaire (see Appendix A). To identify any items that were likely to cause confusion or misunderstanding, following the procedure outlined by Dörnyei (2007), the questionnaire was piloted with a class of ELT students (n=31, not included in the final survey). Following this, some minor adjustments were made to item wording or item order. All the items were given both in students' mother tongue (Turkish) and in the target language (English).

3.4. Data analysis

The item ratings from the questionnaires were entered into SPSS and analyzed for reliability (Cronbach's alpha) and normality of distribution. Given the fact that Likert-type questionnaires produce ordinal data, and that the data from the questionnaire used in this study were not normally distributed, the data were analyzed for medians, nonparametric differences (Mann-Whitney U and Kruskal-Wallis H), and nonparametric correlations (Spearman's rho).

To analyze students' comments or opinions related to the questionnaire items, a grounded approach was adopted. As Dörnyei (2007) explains, a grounded approach involves examining the data recursively for salient themes (open coding stage), which are then grouped around a

unifying axis (axial coding stage) before a core category is identified which over-arches the contributing themes (selective coding stage).

4. Results

4.1. Reliability and normality of distribution

The alpha co-efficient for reliability over all items was calculated at .89, which is considered a reasonably high level of reliability (e.g. Dörnyei 2007). No item substantially altered the alpha value if deleted (the lowest was .88 for item 14, the highest .90 for items 8, 12, 23, 29). A factor analysis using Principal Component Analysis and Equimax Rotation with Kaiser Normalization (see appendix B for component matrix) found that almost all items hung together as a unified construct (listening comprehension strategies), except for five items (8, 12, 23, 29, 35) which neither fitted with the other items nor formed a separate group. They were therefore removed from the survey, leaving a total of 32 items. When the alpha co-efficient for reliability was calculated again after the factor analysis, this time it showed a higher level of reliability at .92. A Kolmogorov-Smirnov test of normality of distribution was run on the main dependent variable (students' responses), and it indicated that none of the items was normally distributed (in all cases, $p=0.000$).

4.2. Medians

24 items received median ratings of 4 (generally true of me), while eight items (1, 4, 8, 11, 13, 14, 15, 28) received median ratings of 3 (neutral). These results are set out in Table 1.

Table 1 Overall Median Rating for Listening Comprehension Strategy Items

No	Listening Comprehension Strategy Items	MEDIAN OVERALL RATING
1	Keep my attention high level	3
2	Try to remain alert/ active	4
3	Sit in the front row	4
4	Come to class prepared before the class	3
5	Attend classes regularly	4
6	Participate in the classroom activities	4
7	Concentrate on the topic	4
8	Concentrate on lecturer's voice tones	3

9	Listen to the lecturer carefully	4
10	Try to keep up with what the lecturer says	4
11	Audio record the lecturer	3
12	Ask questions	4
13	Give examples	3
14	Ask for examples	3
15	Take notes	3
16	Try to understand instead of taking notes	4
17	Try to get all information in good shape	4
18	Improve topic knowledge	4
19	Improve topic interest	4
20	Try to remember my old knowledge	4
21	Use a dictionary	4
22	Guess the unknown words from context	4
23	Translate what the lecturer says	4
24	Imagine different situations and conditions related to the topic	4
25	Visualize the situation	4
26	Try to think out of the box	4
27	Think critically	4
28	Specify / clarify what I know	3
29	Try to understand rather than memorize	4
30	Try to get the main idea	4
31	Try to make the class active	4
32	Internalize the information into myself	4

(1-Always untrue of me; 2-Generally untrue of me; 3-Neutral; 4-Generally true of me; 5-Always true of me)

4.3. Differences

4.3.1. Differences according to Gender

The nonparametric two-independent-samples test of difference (Mann-Whitney U) was used to determine any differences in the use of comprehension strategies by male and female students. Of the 32 items in the questionnaire, according to Mann-Whitney U test results, it

was found that female students rated eight of the strategies (items 4, 7, 9, 11, 18, 20, 25, 27) significantly more than the males (see Table 2).

Table 2 Significant Differences according to Gender

No	ITEM	DIFFE- RENCE	MEAN RANK (male)	MEAN RANK (female)
4	Come to class prepared before the class	p=.045	32.40	42.48
5	Attend to classes regularly	p=.001	28.73	44.87
7	Concentrate on the topic	p=.012	31.05	43.36
9	Listen to the lecturer carefully	p=.003	29.88	44.12
11	Audio record the lecturer	p=.016	31.23	43.24
18	Improve topic knowledge	p=.011	30.93	43.43
20	Try to remember my old knowledge	p=.006	30.35	43.10
25	Visualize the situation	p=.045	32.57	42.37
27	Think critically	p=.030	32.17	42.63

4.3.2. Differences according to Full EMI and Partial EMI context

The nonparametric Mann-Whitney U test was run to find out any differences in the use of listening comprehension strategies by full EMI program students and partial EMI program students. There were five significant differences found, three in favor of the partial EMI students, and two in favor of the full EMI students. Of the 32 items in the questionnaire, it was found that the partial EMI program students tried to remain active in the class (item 2), to understand the lecture(r) rather than take notes (item 16), and to get the main idea of the lecture (item 30), while the full EMI program students came to class prepared before the class (item 4) and preferred to listen to the lecture(r) carefully (item 9) (see Table 3).

Table 3. Significant Differences according to Full and Partial EMI Context

No	ITEM	DIFFE- RENCE	MEAN RANK (FULL)	MEAN RANK (PARTIAL)
2	Try to remain alert/ active	p=.005	28.70	42.75
4	Come to class prepared before the class	p=.009	48.33	34.24

9	Listen to the lecturer carefully	p=.021	46.85	34.88
16	Try to understand instead of taking notes	p=.019	29.91	42.23
30	Try to get the main idea	p=.018	30.07	42.16

4.3.3. Differences according to Class (Freshman, Sophomore, Junior, Senior)

According to a Kruskal-Wallis H test of difference for several independent samples, there were 11 questionnaire items which showed a significant difference according to class. Interestingly, all of the differences except for one (item 9, about listening carefully to the lecturer, which freshmen students rated most highly) were in favor of the senior students (see Table 4).

Table 4 Significant Differences according to Class

No	ITEM	DIFFERENCE	MEAN RANK (FRESHMAN)	MEAN RANK (SOPHOMORE)	MEAN RANK (JUNIOR)	MEAN RANK (SENIOR)
2	Try to remain alert/active	p=.019	30.80	32.50	40.80	49.39
5	Attend to classes regularly	p=.029	38.22	27.50	35.67	49.81
7	Concentrate on the topic	p=.010	41.80	22.04	37.04	47.11
9	Listen to the lecturer carefully	p=.000	49.67	17.96	30.83	47.72
11	Audio record the lecturer	p=.033	31.87	39.00	35.35	50.67
12	Ask questions	p=.007	29.15	38.92	36.80	52.33
20	Try to remember my old knowledge	p=.026	31.05	33.42	38.22	49.28

24	Imagine different situations and conditions related to the topic	p=.012	31.26	30.75	40.35	50.56
27	Think critically	p=.050	32.33	33.88	38.50	49.47
29	Try to understand rather than memorizing	p=.003	29.78	41.58	34.35	52.89
32	Internalize the information into myself	p=.006	32.67	35.08	34.43	53.42

4.3.4. Differences according to Major

According to a Kruskal-Wallis H test of difference for several independent samples, there were nine questionnaire items which showed a significant difference according to students' major. Of these, seven were rated most highly by those studying of International Trade, while two were rated most highly by students of Agriculture (see Table 5).

Table 5 Significant Differences according to Major

No	ITEM	DIFFERENCE	MEAN RANK (BUSINESS)	MEAN RANK (ELECT.)	MEAN RANK (AGRIC.)	MEAN RANK (TRADE)
2	Try to remain alert/active	p=.002	30.47	45.30	40.75	54.50
5	Attend to classes regularly	p=.005	34.54	29.33	48.33	53.95
11	Audio record the lecturer	p=.026	32.12	38.90	51.38	45.95
12	Ask questions	p=.002	29.34	45.17	46.92	51.86
20	Try to remember	p=.005	31.65	36.27	45.25	53.82

	my old knowledge					
		p=.046	34.11	38.10	38.63	54.09
23	Translate what lecturer says					
24	Imagine different situations and conditions related to the topic	p=.024	32.42	39.50	43.13	53.09
27	Think critically	p=.023	31.70	41.80	44.58	50.86
29	Try to understand rather than memorize	p=.022	31.82	41.10	51.71	43.64

4.4. Correlations

Relationship of students' General GPA scores to questionnaire items

When analyzed using Spearman's rho test of correlation, students' general GPA scores were found to be significantly related to six questionnaire items (items 2, 11, 17, 20, 24, 28) as can be seen from Table 6. All these results seem to suggest that those EMI students having higher GPA scores try to remain more alert or active during the lecture, and they try to get all information in good shape. To do this, they audio record the lecturer, they use background knowledge, they imagine different situations, and thus they clarify what they know about the lecture.

Table 6 Items Positively Related to EMI Students' General GPA Scores with Spearman's Correlation (C) and Probability (P)

No	ITEM	C	P
2	Try to remain alert/ active	.642	p = 0.046
11	Audio record the lecturer	.685	p = 0,029

17	Try to get all information in good shape	.667	p = 0.035
20	Try to remember my old knowledge	.832	p = 0.003
24	Imagine different situations and conditions related to the topic	.644	p = 0.044
28	Specify / clarify what I know	.730	p = 0,017

4.5. Qualitative Results

Comments

The students wrote 108 comments, altogether. Many students wrote in English, and their statements have been given verbatim with any infelicities. Other some students preferred to write in their mother tongue, Turkish, to be able to clarify their opinions, and these have been translated by the authors of the study.

As the students wrote their comments in the column provided for each item in the questionnaire, when analyzing the comments, by its nature, they are already grouped according to the items, so no conflict occurred among the authors. In order avoid repetition; the authors have only selected those comments which seemed most relevant or representative.

Students' strategies to follow the EMI lectures

Although eight items in the questionnaire received neutral median rating (neutral=3) and twenty-four received median rating four (generally true of me), the students still seemed to suggest a variety of ways to follow their lectures. When combined, these items fell into three main themes:

1. *Focus on the lecture(r)* Altogether 15 students stated that they gave their full concentration on the lecture or lecturer while listening during the class. One of the male students from International Trade department said “*I look at my lecturers' eye*”. Similarly, while one student from Business said “*I focus just on the board*”, another from the same department stated “*I keep my mobile phone away from me to focus on lecturer*”.
 - I try to make eye-contact to my lecturer or interlocutor in order not to lose my attention (Electronics and Communication Engineering)

- I make a good communication with teacher, ask to he/she some questions about the topic (Business)
 - By being careful about the questions of the lecturer (Agricultural Biotechnology)
 - While I am listening to lecturer, looking for if a word can be difficult (International Trade)
 - Trying to catch keywords during listening (Electronics and Communication Engineering)
2. *Note taking* EMI students, especially those from Business Management, stated that they took notes to follow their lectures. They argued that it is one the most common and effective strategies that they used to follow the lecture. Altogether, 35 students stated that they took notes during the lecture, of whom 27 took notes in English, while the remainder either took notes in Turkish or used both languages.
- I write keywords during listening (Business)
 - I am generally taking some notes from the book (Agricultural Biotechnology)
 - Actually, I prefer to listen the lecture, and I take notes (Business)
 - I take notes in English but sometimes write down in Turkish to understand well (Business)
3. *Individual effort* Many students also argued that it is important for them to come to class prepared and that to understand the lecture they should put great effort both before and after the lecture. One of the female students from the Business department stated that “*I prepared before class, repeat after class*”, another from International trade said “*I research before coming to class*”. They explained that they either give examples or make comments on the topics discussed or become involved in classroom discussions to keep themselves alert or their attention high.
- I’m trying to write down what I learn after the class and also when trying to the exams I write down more than once. So that I do a lot of repetition (Business)
 - I repeat notes by myself repeatedly (Business)

- I use top-down and bottom-up listening strategies in general. I repeat what lecturer said myself in my mind to clarify the topic (International Trade)
- Memorization, creative writing, critical thinking, summarizing, paraphrasing, skimming, scanning (Agricultural Biotechnology)
- Raising my hands all the time (Electronics and Communication Engineering)
- I make some sketches (Business)
- I talk too much in the class (International Trade)

5. Discussion

This study aimed to reveal what strategies EMI students generally use when listening to their lecture(r)s during the class.

Of 32 items in the questionnaire, 24 items were found “generally true” by all the participants, while another eight items were found “neutral”. That is, median scores meant that the students employed almost all strategies to be able to comprehend the lecture or to follow the lecturer. The EMI students stated that, throughout the lecture, they generally put effort to remain alert (item 1), sit in the front row (item 2), attend to classes regularly (item 5), participate in the classroom activities (item 6), concentrate on the topic (item 7), listen to the lecturer carefully (item 9), try to keep up with what the lecturer says (item 10), ask questions (item 12), try to understand instead of taking notes (item 16), try to get all information in good shape (item 17), improve topic knowledge (item 18), improve topic interest (item 19), try to remember their old knowledge (item 20), use dictionary (item 21), guess the unknown words from context (item 22), translate what lecturer says (item 23), imagine different situations and conditions related to the topic (item 24), visualize the situation (item 25), try to think out of the box (item 26), think critically (item 27), try to understand rather than memorize (item 29), try to get the main idea (item 30), try to make the class active (item 31), and internalize the information (item 32). The fact that almost all the items reflected what the students generally do during lecture indicates that they put great effort to override the obstacle to comprehend the lectures or to improve their academic knowledge (e.g. Kırkgöz 2013). As with Kılıçkaya’s (2006) study, so many students used translation as another strategy, arguing that they translated (item 23) what was said into their mother tongue to attain at much deeper understanding.

On the other hand, the students were also found neutral about eight items (median rating=3), although in the comments section they, in fact, wrote many strategies that they used to keep their attention high (item 1) in the class such as making close eye-contact with the lecturer, asking questions about the topic, paying attention to words or keywords of the course, that they come to class prepared (item 4) researching the course content before the class, that they concentrate on lecturer's voice tones or look into lecturers' eyes (item 8), that they sometimes audio record the lecturer (item 11) to take notes in a better shape after class, that they give (item 13) or ask for examples (item 14) to keep them more alert or focused on the lecture, take notes (item 15) generally in the target language, English, and that they clarify what they know (item 28) elaborating the topic discussed. As can be seen, although the students gave "neutral" rating to those eight items, they in fact stated in their comments to the items that they used so many of these listening comprehension strategies, and it is natural to find out differences in the perceptions of students not only from the same departments (e.g. İnan et al. 2012) but also from different departments (e.g. Rogier 2012).

The inferential statistical analyses showed a series of differences between gender, context, class, major, and found a relationship of students' GPA scores to questionnaire items. Sex/gender is thought to be an important learner variable, which was also found in this study showing that females employed many more strategies than male students. That is, to understand the lecture, female students used higher critical thinking skills, visualized the situation discussed in the lecture, and used their background knowledge, etc. (see table 2). Such a difference has been, in fact, already found in the literature (e.g., Ehrman and Oxford 1989; Green and Oxford 1995). As to any possible reason, Oxford et al. (1988) argued that it is because of the interactive nature of females that they show an advantage over men. As a biological explanation, Legato (2005) suggested that females use both right and left side of their brain, thus they were good at language development, while Kiziltepe (2003) argued that male students tend to be less attentive to their studies than female students.

According to whether students are in full EMI context where they receive only English medium instruction or partial EMI context where they generally take one course per semester in English as medium of instruction, strategies that they used changed significantly. The students who were receiving a full English medium instruction paid more attention to listening to the lecturer and coming to class prepared before the lecture, while those receiving only one English medium instruction course per semester, namely partial EMI context, tried to remain alert, get the main idea, and understand the lecture. As can be seen, when students

do not have much exposure to English medium instruction course as in partial EMI context, they start to use different strategies, generally endeavoring to understand the lecture getting the main idea.

The study also found a significant difference in the strategy use from first year to final year students. When compared to the other classes, notably senior students (fourth graders) were found to have the highest mean ranks, which were all statistically significant. According to difference, when students were at fourth grade, they tried to remain more alert, attended to classes more regularly, concentrated on the topic listening more carefully or audio recording the lecture, asked questions getting advantage of content schemata or imagining different situations related to the topic, thought more critically trying to understand rather than memorize, and at the end internalizing the information. According to Haggis (2003) and Marshall and Case (2005), learning at higher education occurs at two levels: surface and deep. The students at surface level do not question or criticize the information introduced (Entwistle and Ramsden 1983), generally leading memorization or rote learning (Entwistle 2001), while at deep level the topic is discussed in the class allowing the students to ask questions, exemplify their ideas, and integrate what they have learned with what they know. According to Ramsden (2003), deep learning occurs when students find the task relevant to themselves, which will lead to higher level of understanding the concepts or theories discussed at the end (Entwistle and Ramsden 1983). The fact that fourth graders in this study generally espoused more different approach to their learning situation than the other graders also accords with the results found by Kırkgöz's (2013) study, in which first graders showed "a tendency towards surface learning" (p.30), while fourth graders chose to learn making associations between concepts rather than memorize them.

In addition, significant differences were found according to the students' major/department. International trade students, for instance, used significantly more strategies than those in Business Management, Electronics and Communication Engineering, and Agricultural Biotechnology. International trade students seemed to remain more active, attended to classes more regularly, asked questions, used their background knowledge, translated what the lecturer says, imagined different situations related to the topic, and thought more critically, while Agricultural Biotechnology students tried to understand the lecture rather than memorize and probably because of this, they generally audio recorded the lecturer. The fact that the students from different departments used different strategies has been also found by the earlier research conducted on subject teachers/lecturers. For instance, İnan et al.

(2012) investigated perceptions of 85 content area teachers on the importance of English language skill at two universities in Turkey. Their study similarly revealed that there were differences among lecturers from different departments not only between skills (e.g. reading, writing, listening, speaking) but also within the skill itself (e.g. writing). This was encountered in the comments section of this study, which likewise showed that students from different departments looked for a different aspect of vocabulary coverage in the lecture. For instance, while a student from international trade was looking for whether the word used in the lecture is difficult or not, another from electronics and communication engineering was paying attention to key words related to the lecture. In addition, students' comments showed that thanks to their individual effort students from both business management and international trade were giving greater importance to do some research before the lecture and repeat/revise what they have learned after the lecture at home to understand it.

As to correlations, the higher GPA students' responses were found to have a significant relationship to six questionnaire items, indicating that the students having higher GPA scores were generally more active in the lecture, put effort to get all the information in good shape either taking notes or audio recording the lecture, both use background knowledge and imagine different situations related to the topic discussed in the lecture, and aimed to clarify what they know.

5.1. Pedagogical Implications

A variety of implications can be drawn from the results of this study for different EMI contexts.

First, EMI lecturers or subject teachers should become aware of the fact that the students especially in expanding circle countries (e.g. Turkey) may have traditional study skills because of their traditional education background. That is, because many of the students may not know about how they can juggle with so many things in the class such as while listening to the lecturer on the one hand, taking notes or following power point slides on the other, not in their mother tongue, but in English spoken as a foreign language, they should be equipped with knowledge of metacognitive strategies. Especially, the students in partial EMI context should be trained about what type of strategies they should employ when listening to the lecture(r), because in partial EMI context they receive generally only one EMI course per semester.

Second, when teaching strategies or increasing students' awareness toward strategy use, as with the difference from first year to final year students in this study, especially freshman year students could be taught to adopt "deep learning approach" such as imagining different situations or conditions related to topic (item 24), understanding rather than memorizing (item 29), or trying to internalize the information (item 32) (e.g. Kırkgöz 2013) rather than adopt surface learning strategies (such as memorizing).

In addition, major difference should be considered when strategy instruction is given. For instance, according to the results of this study, activating background knowledge or schemata is very important to understand the lecture(r) for international trade students (mean rank=53.82), while it is not that important for business management students (mean rank=31.65). The same can be found in critical thinking skill and imagination of different conditions to understand the lecture(r). Therefore, schema building activities should be well prepared by the lecturers before the class considering students' different needs in their major. Furthermore, while preparing course content or classroom materials, especially on the language level of the materials, subject teachers/lecturers should collaborate with language teachers. Such type of collaboration was found to be "highly beneficial" (Macaro et al. 2016, p. 51), because different backgrounds of both lecturers and language teachers brought about "change in content delivery" (ibid. 2016, p. 69) in EMI contexts at higher education. At the end of their collaboration, subject teachers/lecturers in Macaro et al. (2016) became aware of the fact that they should focus on their language proficiency as well, not only students', and thus that their language proficiency needs to be high enough in 'identifying and addressing students' language problems in their classes instead of merely expecting them "to be ready for EMI" when they arrive' (p. 70). Because of different needs of students in different major, they can be allowed to adopt some strategies such as asking the lecturer the content of the course in L1 (Airey and Linder 2006) or teachers should help students try 'certain strategies or different kinds of skills practice' (Graham 2006, p. 179). For a better overall quality of student learning, both universities and lecturers could take responsibility. Not only should EMI teachers "lower learning anxiety of local students" (p. 77), but also EMI universities should activate supporting systems or provide 'resources to support their students' English language learning.' (Huang 2015, p. 77). According to Kırkgöz (2009b) 'university teacher education programs need to be revised and updated.' (p.680)

Finally, although it is not possible to establish cause and effect relationship in correlational statistics, it may be still worth considering what higher GPA scorers generally do

in the lecture to understand it, especially given the results of studies revealing the ineffectiveness of English language instruction in EMI universities in Turkey to help students learn academic subjects through EMI (e.g. Kırkgöz 2009a; British Council 2015). Therefore, when strategy training is given at least to “some” students who want to compete with the others on the international market (e.g. Graddol 2006), students should become aware of how it is necessary to be alert in the class, to get all information in good shape either by taking notes or audio recording the lecture(r), to get advantage of background knowledge, to imagine different situations or conditions related to the topic discussed, and to specify or clarify what they know during the lecture.

5.2. Suggestions for Ongoing Research

Although the study was conducted with limited number of EMI students from three universities only in Turkey, its results have still revealed some important insights for further research to generalize what was found in this study.

First, future research studies could involve many more participants from higher number of universities, in different contexts, particularly investigating any difference in the strategy use between those at state universities and at private sector. Second, the instruments for data collection should be varied, including stimulated recall protocols to find out what students really think at the time of the lecture, or oral interviews to ask students to elaborate what they really think or use as the strategy and why they use. Also, not only subject teachers but also English language teachers at prep year program should be involved as important stakeholders of EMI program; what they think about students’ strategy use and/or whether/what strategies they teach to help their students to survive in the lecture should be researched (e.g. Macaro et al. 2016). Finally, experimental studies can be conducted to explore whether strategy training in EMI context is effective in the strategy use and students’ success at understanding lectures.

6. Conclusion

This study investigated the strategies that EMI students used to comprehend their lecture(r)s, which, according to main results, changed depending on gender, context, grades or classes, and major/departments. It also found what higher GPA scorers generally prefer to do to comprehend better running correlational statistics between GPA scores and questionnaire items. Qualitative data obtained by students’ opinions also displayed complementary results, namely, students’ comments were consistent with the questionnaire items. With larger number

of students, including both subject and language teachers, in a variety of departments, future studies can yield more generalizable data as to understanding what EMI students generally do while listening to the lecture.

Appendix A. Listening Comprehension Strategy Questionnaire

Dear student: We are doing a research study about your listening comprehension strategies. The result of the questionnaire is only for research and we will keep your personal information confidential. Thank you for your cooperation!

PART A. Background Information

Name: _____ Surname: _____

Age: _____

Gender: Male () Female ()

Major /Department: _____

Class: 1st Grader () 2nd Grader () 3rd Grader () 4th Grader ()

Took Preparatory Year: Yes () No ()

Nationality: _____

PART B. Listening Comprehension Strategies

Now please read the following list of comprehension strategies. Please mark each one according to whether they reflect your opinion or what you do during the lecture to understand it much better.

1- Always untrue of me	2- Generally untrue of me	3- Neutral	4- Generally true of me	5- Always true of me
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No	When I am listening to the lecturer, I...	Rating (from 1 to 5)	Any comments?
	Keep my attention high level		How do you do that?
2	Try to remain alert/ active		What specifically do you do?

3	Sit in the front row		
4	Come to class prepared before the class		What else?
5	Attend to classes regularly		
6	Participate in the classroom activities		
7	Concentrate on the topic		
8	Concentrate on lecturer's voice tones		
9	Listen to the lecturer carefully		
10	Try to keep up with what the lecturer says		
11	Audio record the lecturer		
12	Ask questions		
13	Give examples		
14	Ask for examples		
15	Take notes		
16	Try to understand instead of taking notes		
17	Try to get all information in good shape		In what language do you take notes?
18	Improve topic knowledge		
19	Improve topic interest		
20	Try to remember my old knowledge		
21	Use dictionary		
22	Guess the unknown words from context		
23	Translate what lecturer says		
24	Imagine different situations and conditions related to the topic		

25	Visualize the situation		
26	Try to think out of the box		
27	Think critically		
28	Specify / clarify what I know		
29	Try to understand rather than memorize		
30	Try to get the main idea		
31	Try to make the class active		
32	Internalize the information into myself		
	Any other strategies you use...		

I consent to these data being used for research and/or publication:

_____ (signature)

APPENDIX B: Factor Analysis Using Principal Component Analysis and Equimax Rotation with Kaiser Normalization

Component Matrix^a

	Component
	1
A14	.747
A6	.699
A21	.694
A27	.664
A17	.645
A1	.644
A20	.614
A19	.609
A25	.605

A16	.595
A2	.595
A24	.595
A37	.584
A10	.574
A22	.572
A34	.550
A18	.532
A7	.515
A11	.515
A15	.512
A31	.510
A13	.496
A28	.488
A9	.472
A5	.441
A4	.430
A30	.429
A26	.412
A36	.388
A33	.357
A32	.347
A3	.328
A35	
A29	
A8	
A23	
A12	

Extraction Method:

Principal

Component

Analysis.

a. 1 components
extracted.

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