# Learners' Perceptions towards Dual-Coding in Hypermedia Environments: Listening Texts, Keywords, Visuals and Captions [1,2]

## Öğrencilerin Hiper Ortamlarında İkili Kodlamaya Yönelik Algıları: Dinleme Metinleri, Anahtar Kelimeler, Görseller ve Altyazılar

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**Abstract**

This study investigated 57 participants' (N= 57) perceptions towards dual-coding in design of *audio-only listening texts* (i.e. re-provision of the same *audio-only listening texts* in the form of *audio-only listening texts + keywords* or supplementary contextual *visuals + keywords* at non-initial phases of the while-listening stage, and *audio-only listening texts* + (full) *captions* at final listening stage) in adaptable hypermedia environments (HEs) for foreign language learning (FLL). The study also aimed to find out whether there were any differences between their perceptions in terms of participants' characteristics as well as between their perceptions towards dual-coding. The study was both quantitative and qualitative in nature. The results of the quantitative data were analysed with SPSS (i.e. Mean, Std. Deviation, ANOVA, Pearson Correlation Test). The results revealed that the participants were overwhelmingly in favour of the use of dual-coding in design of *audio-only listening texts* in HEs for FLL. The majority believed that not only did the dual-coding in design of *audio-only listening texts* benefit them in different ways, but it also contributed to the enhancement of their learning. Moreover, the results of the quantitative data revealed that there were some significant differences between the participants' perceptions.

**Keywords**: Hypermedia, dual-coding, listening texts, visuals, captions, instructional design

**Öz**

Bu çalışma 57 katılımcının (N= 57) uyarlanabilir hipermedya ortamlarında yabancı dil öğrenmeye yönelik dinleme metinlerinin tasarımında ikili kodlamaya (dinleme aşamasının ilk olmayan aşamalarında sesli dinleme metinlerinin 'sesli dinleme metinleri + anahtar kelimeler veya 'sesli dinleme metinleri + bağlamsal görseller + anahtar kelimeler' şeklinde, ve son dinleme aşamasında ise 'sesli dinleme metinleri + altyazılar' şeklinde yeniden sağlanmasına) yönelik algılarını araştırdı. Çalışma ayrıca katılımcıların

özellikleri açısından algıları ile ikili kodlamaya yönelik algıları arasında fark olup olmadığını ortaya çıkarmayı amaçlamıştır. Çalışma hem nicel hem de nitel niteliktedir. Nicel verilerin sonuçları SPSS (yani Ortalama, Std. Sapma, ANOVA, Pearson Korelasyon Testi) ile analiz edildi. Sonuçlar, katılımcıların, uyarlanabilir hipermedya ortamlarında yabancı dil öğrenmeye yönelik dinleme metinlerinin tasarımında ikili kodlamanın kullanılmasından büyük ölçüde yana olduklarını ortaya koydu. Çoğunluk, sesli dinleme metinlerinin tasarımında ikili kodlamanın onlara farklı şekillerde fayda sağladığına, aynı zamanda öğrenmelerinin geliştirilmesine de katkıda bulunduğuna inanıyor. Ayrıca, nicel verilerin sonuçları, katılımcıların algıları arasında bazı önemli farklılıklar olduğunu ortaya koymaktadır.

**Anahtar Kelimeler**: Hiper ortamlar, ikili kodlama, dinleme metinleri, görseller, altyazılar, öğretim tasarımı

### Introduction

Pedagogically outstanding differences between (adaptive) hypermedia environments (HEs) and traditional materials (i.e. tape cassettes, video cassettes, TV programmes, radio programmes and movies used for listening comprehension), and the positive aspects of the former are already very well-documented (Turel, 2021a, 2021b; Cárdenas-Claros, 2021; Turel, 2018; Chukharev-Hudilainen and Klepikova, 2016; Chou, 2012; Mosalanejad et al., 2012; Turel 2016, 2015a, 2014a, 2011; Baturay et al., 2010; Yu et al., 2010). In this study, firstly the positive features of HEs are shortly focussed on and aligned with foreign language learning (FLL) hypotheses and theories.

It is the combination, delivery and adaption of a wide range of digital elements on the same digital computer platform that make (adaptive) HEs more efficient (Turel, 2018, 2021b; Cárdenas-Claros, 2009; Herron et al., 2002; Ridgway, 2000). Such a strength enables hypermedia developers to provide multidimensional, multi-sensory adaptable learning environments in which rich, efficient, instant, comprehensible, optimum and meaningful input, tasks, feedback and so on can be presented and personalised on the same digital platform for target learners (Turel, 2016, 2015a; Türel, 2014, 2012,). Additionally, in such learning environments, learners' attention can be drawn to both forms and meaning in input, which corresponds with a wide range of learning and design hypothesis and theories such as the dual-coding theory, the generative theory of multimedia (Ginther, 2002; Mayer, 1997), the redundancy hypothesis (Al-Seghayer, 2001; Sherwood et al., 1987), the comprehensible input hypothesis and theory (Tschirner 2001, p.311; Schmidt, 1990, p.139) and the noticing hypothesis (Nicholas et al. 2001, p.721; Schmidt 1990, p.141).

Apart from enabling learners control; ease of use; and a navigational and tension-free environment particularly during self-study, which is a requirement of both person perception theory and social learning theory (Robinson, 1991, p.157), HEs also provide the opportunity for learners to produce immediate, multidimensional and multi-sensory output (Turel, 2018; Turel,

2015a, 2016; Türel, 2012). This is a requirement for comprehensible output. Giving learners the opportunity to produce comprehensible output can promote noticing and contribute to FLL through 'hypothesis testing'. The opportunity to produce comprehensible output also serves as a metalinguistic function (i.e. the ability/opportunity to think about and analyse the produced accurate/inaccurate forms and structures) (Tschirner, 2001, p.311).

These positive aspects of HEs motivate learners. Such positive aspects are appreciated by learners (Türel, 2010a), and are praised (Herron et al., 2002) and considered 'very helpful' (Tschirner, 2001, pp.312-3). These positive features are also a requirement of social-psychological theory and the socio-educational model, which focus on the role of attitudes and motivation in FLL (Gardner, 1985, p.158).

Hyperlinks and efficient combinations in HEs grant interactivity. Learners can access many useful features of HEs such as glossaries, syntax, captions, feedback or re-listen to the same listening texts without losing time in different modalities. For example, unfamiliar syntax and lexis can be explained through hyperlinks and optimum combinations (De Ridder, 2002). Similarly, feedback can be made up of differing components such as audio, video, visuals, texts or optimum combinations. Such components meet learners' both visual and acoustic needs, and they can be provisional and personalised. Such feedback can help learners to (a) discover what and why they could not understand and (b) overcome the difficulties (Türel, 2012).

In the same way, cultural differences between first language and the target language can be expressed in plain words and illustrated through simple interactive samples, pictures or video clips in the form of annotations, feedback or advance organisers (Turel, 2014b; Turel & McKenna, 2013). Such a provision is also a requirement of socio-cultural theory, which focuses on and emphasises the importance of culture in FLL (Platt & Brooks, 2002, p.369; Vygotsky, 1978).

All of these can channel and lead language learners to develop effective strategies. They can also contribute in terms of comprehension and retention of the provided input (Türel, 2014, Türel, 2012, 2010a, 2010b; Moreno & Mayer, 2002). These outstanding features of HEs can help learners in a wide range of ways such as discovering the difficulties, the right solutions, what the rules are; evaluating their mistakes, errors and weaknesses; and detecting the underlying reasons (Mangiafico, 1996). Such positive functions, which are a requirement of autonomous learning theory, posits that learners should take control of their learning and prepare for real-life (Voller, 1997, p.106), make more real-world learning contexts and more authentic and interactive tasks available (Ashworth, 1996). Such positive features make HEs highly motivating. For example, when learners make mistakes, this does not de-motivate them because they have the opportunity to receive personalised instantaneous and meaningful feedback (Türel, 2012; Gillespie & McKee, 1999; Herrington & Oliver, 1997).

To be able to design effective and efficient listening input in HEs, we need to bear in mind the requirements of a wide range of learning and design models, theories and hypothesis. These models, theories and hypothesis are: adaptive hypermedia listening environments model (AHLE Model, Turel, 2021c, pp. 31-44), dual-coding theory (Paivio, 2006, pp. 82-86), the generative theory of multimedia (Ginther, 2002; Mayer, 1997), the redundancy hypothesis (Al-Seghayer, 2001; Sherwood et al., 1987), the comprehensible input hypothesis and theory (Tschirner 2001, p.311; Schmidt, 1990, p.139), working memory, the redundancy hypothesis (Al-Seghayer, 2001; Sherwood et al., 1987), the comprehensible input hypothesis and theory (Tschirner 2001, p.311; Schmidt, 1990, p.139) the noticing hypothesis, and many more. Comenius argues that we – teachers and hypermedia developers - must provide learners of any subject with the opportunities to have direct experience with things, as "things are essential, words only accidental; things are the body, words but the garment; things are the kernel, words the shell and husk. Both should be presented to the intellect at the same time, but particularly the things, since they are as much objects of understanding as is language" (Comenius, 1896 translation, p. 267; cited in Piaget, 1993).

Modern-day studies continue to favour the dual-coding (i.e. verbal system and nonverbal system) theory (e.g., Turel, 2018, 2016, 2015b, 2014a; Paivio, 2006, pp. 82-86; Richardson, 2003). Purnell and Solman (1991) also state that combination of text and illustrations has additive effects on the comprehension of material by high school students. Studies reveal that combining multiple types of media such as text, audio, supplementary contextual visuals, and video can aid facilitate comprehension, and vocabulary learning (Turel, 2011; Chun & Plass, 1996, 1997; Lomicka, 1998).

Therefore, providing language learners with the opportunity to re-listen to/re-view the same *audio-only listening texts* in the form of *audio-only listening texts + keywords* or *audio-only listening texts* + (supplementary contextual) *visuals* + keywords, and *audio-only listening texts* + (full) *captions* in HEs should be more effective in promoting comprehension and recall of instructional texts (i.e. listening texts, pronunciation, lexis and syntax). The re-provision of the same *audio-only listening input* in the form of optimum combinations (i.e. *audio-only listening texts + keywords* or *audio-only listening texts* + supplementary contextual *visuals + keywords* at non-initial phases of the while-listening stage, and *audio-only listening texts* + full *captions* at the final listening stage) in HEs should and can enhance language learners' foreign language acquisition. For example, Thompson and Paivio (1994) reveal that object pictures and sounds had positive / additive effects on memory. The re-provision of the same *audio-only* listening input in the form of such optimum combinations (at non-initial phases of the while-listening stage) in HEs is probably more appealing to modern day language learners.

Multiple-forms of the same *audio-only listening texts* (i.e. *audio-only listening texts + keywords*, *audio-only listening texts* + supplementary contextual *visuals + keywords* at non-initial phases of

the while-listening stage, and *audio-only listening texts* + full *captions* at the final listening stage) were provided  as an aid to help learners to comprehend and acquire the delivered listening texts that were provided as *audio-only listening texts* at initial phases of the while-listening stage. Providing the same *audio-only listening texts* in different / multiple forms (i.e. *audio-only listening texts + keywords*, *audio-only listening texts* + supplementary contextual *visuals + keywords*, and *audio-only listening texts* + full *captions*) at different listening stages in HEs delivers language learners with the opportunity to re-listen to/re-view the same *audio-only listening texts* in different forms, and as a result, repetitions (in different forms) result in better recollection (Chukharev-Hudilainen and Klepikova, 2016; Xue et al., 2010; Tyler et al., 1979). The assumptions underlying these are that repetitions require learners to put more effort. Thus, the research questions of this study are:

1.    What are the participants' general perceptions of re-listening to/re-viewing the same *audio-only listening texts* with *keywords* or (supplementary contextual) *visuals + keywords* at the non-initial phases of the while-listening stage in HEs for FLL?

2.    What are the participants' general perceptions of re-listening to/re-viewing the same *audio-only listening texts* with (full) *captions* at the final listening stage in HEs for FLL?

3.    Are there any differences between the participants' perceptions in terms of their personal characteristics (i.e. gender, age-group, third language, language learning period, level in English, level in listening, level in computing, feeling confident while learning English and so on.) as well as between their perceptions towards dual-coding (i.e. *audio-only listening texts* with *keywords* or supplementary contextual *visuals + keywords, and full captions*) in design of *audio-only listening texts* in HEs for FLL?

**The Purpose Of The Study**

This study attempted to investigate how the participants valued (a) the provision of *keywords* or (supplementary contextual) *visuals + keywords* with the same *audio-only listening texts* at non-initial phases of the while-listening stage(s) in the HEs for FLL and (b) the provision of (full) *captions* with the same *audio-only listening texts* at the final listening stage in the HEs for FLL. The study also aimed to investigate whether there were any differences between the participants' perceptions in terms of their personal characteristics as well as between their perceptions towards dual-coding in design of *audio-only listening texts* in HEs for FLL.

**Method**

*The Participants*

The participants were 57 non-native speakers (15.8% male, 84.2% female). Their level in listening was intermediate (i.e. pre-intermediate: 19.3%, intermediate: 66.7%, upper-intermediate: 12.3%, no-answer: 1.8). All of the participants were undergraduate students. The participants were computer literate (i.e. Level 1- Basic User: 14.0%, Level 2: 8.8%, Level 3: 45.6%,

Level 4: 12.3%, Level 5 – Proficient user: 8.8%, No-answer: 10.5%). They were learning English as a foreign language at one of the newly established universities (i.e. 2007) in the eastern part of Turkey. The participants' age-range was: 20 and below age group: 36.8%, 21-25 age group: 54.4%, 26-30 age group: 7.0%, and 31 and above age group: 1.8%. Majority of the participants never used any language learning application before (No - never used -: 84.2%, Yes: 14.0% and no-answer: 1.8%).

**The Hypermedia Listening Application**

The hypermedia application made use of in this study was designed and developed by the author of this study, which is the speciality of the author. The hypermedia application was the right level for the participants (i.e. intermediate). It aimed to develop and practise the participants' listening skills as well as to improve their listening development as a part of FLL, which the participants needed most. To achieve this, a wide range of activities were provided in the application to help the participants in practising and developing their acoustic and visual channels, receptive and productive skills. Through the provided hypermedia listening application, the participants were instructed (a) at what stage what kind of strategies they needed to follow and what they needed to do, (b) how they could improve and develop their listening and listening-skills, and (c) why they needed to study in the instructed ways. While improving their listening skills and development, the hypermedia listening application also aimed to help the participants to become familiar with the target culture, different accents, authentic target language and its' authentic features such as intonation and stress, fillers, false starts, grammatical mistakes and so on. The hypermedia listening application was also expected to improve the participants' vocabulary and pronunciation, which are necessary and essential for listening development and improvement. The hypermedia listening application was designed and created according to findings in the fields of FLL, design of adaptive hypermedia learning environments, and computer assisted language learning. Additionally, it was designed in a way so that the research questions of this study could be investigated and answered.

The hypermedia listening application consists of three units (Table 1). These units are: (a) Smoking II: Introduction, (b) Smoking II: Do they smoke? and (c) Smoking II: Smoking in Public. Each unit consists of three sections. In the first section of each unit, the participants listen to the *audio-only listening texts* and answer the pertinent gradual questions/activities (Figure 1). In the second section of each unit, the participants re-listen to/re-view the same *audio-only listening texts* with *keywords* (Figure 2) or (supplementary contextual) *visuals + keywords* (Figure 3) and answer the pertinent gradual questions. In the third (final) section of each unit, the participants re-listen to/re-view the same *audio-only listening text* with (full-) *captions* (Figure 4) and answer the pertinent gradual questions.

| Unit | Length | Order of exposure |
|---|---|---|
| Smoking II: Introduction | 00:14 | (Firstly) tasks + audio-only listening texts |
| | + | |
| | 00:20 | (Secondly) tasks + the same audio-only listening texts + keywords or (supplementary contextual) visuals + keywords |
| Smoking II: Do they smoke? | | |
| | 00:23 | |
| | 00:58 | |
| Smoking II: Smoking in Public | + | (Thirdly) tasks + the same audio-only listening texts + (full) captions |
| | 00:51 | |
| | + | |
| | 00:35 | |
| The entire audio | 03:21 | |

*Table* *1. The*

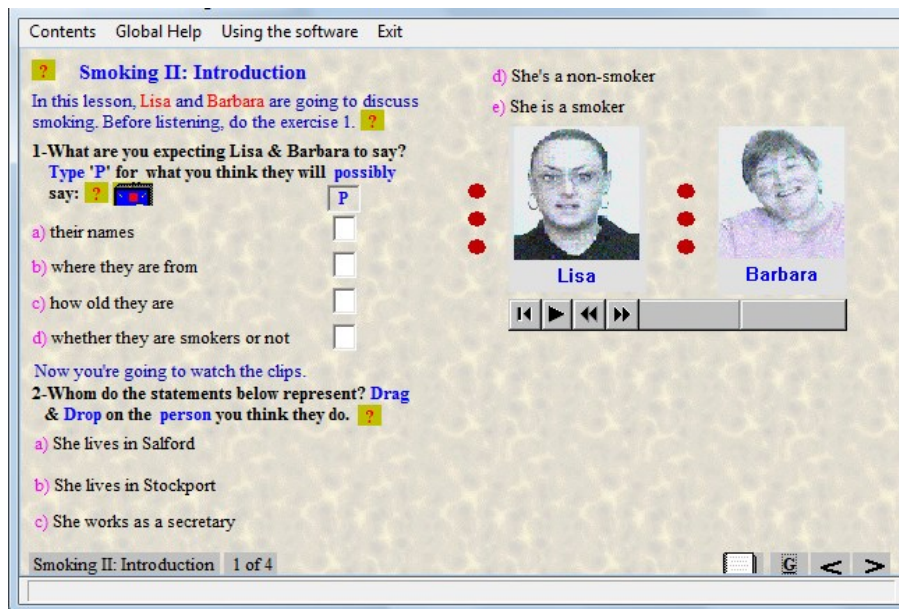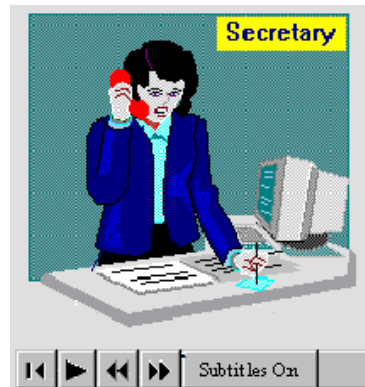*listening media types accessed by the participants*

*Figure 1: A sample of the first section of the first unit at which the participants listen to the audio-only listening text(s) and complete the pertinent gradual tasks*



*Figure 2: A sample of the second section of the first unit at which the participants re-listen to the same audio-only listening text(s) with keywords (and complete the pertinent gradual tasks)*

*Figures 3: A sample of the third section of the first unit at which the participants re-listen to the same audio-only listening texts with (supplementary contextual) visuals + keywords (and complete the pertinent gradual tasks)*



**Figure 4:** *A sample of the fourth (final) section of the first unit at which the participants re-listen to/re-view the same audio-only listening texts with (full) captions (and complete the pertinent gradual tasks)*

### The Procedure

The participants, who were volunteers for the study, accessed the hypermedia listening application in the same class at different times. The lab had 30 PCs. Thus, a maximum of 30 participants could use the application at one time. The participants were introduced to the hypermedia listening application in the first five minutes of the first session. The participants were then requested to complete 'the participants' profiles questionnaire'. Following that, the

participants were free to use the hypermedia listening application as they wished. They used the hypermedia listening application as long as they wanted. After using the hypermedia application, the participants answered the questionnaires (i.e. Likert scale items from strongly disagree to strongly agree - 1 to 5) and the open-ended questions.

*Methodology*

Both quantitative and qualitative researches were made use of (Levy, 2015; Tseng & Yeh, 2013; Masgoret & Gardner, 2003). The research questions required the use of questionnaires, and interviews in the form of open-ended questions (Tseng & Yeh, 2013; Nunan, 1993). Although some new items were added and the existing items were further improved and tested, Brett's data collecting procedures (1999) were used for the participants' profiles questionnaire. Data collecting questionnaires regarding the participants' perceptions of re-listening to/re-viewing the same audio-only listening texts with (a) keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage, as well as with (b) (full-) captions at the final listening stage were prepared and pilot tested by the author of this study, Cronbach's Alpha of which is below.

The participants' pre-exposure characteristics questionnaire consisted of 10 general items (i.e. occupation, gender, age, computer literacy, English learning period etc.) and 13 Likert scale items (i.e. 'feeling' and 'how often' questions). The questionnaire about re-listening to/re-viewing the same audio-only listening texts with keywords (α = .870) included 11 Likert scale items from strongly disagree to strongly agree. The questionnaire about re-listening to/re-viewing the same audio-only listening texts with (supplementary contextual) visuals + keywords (α = .863) included 11 Likert scale items from strongly disagree to strongly agree. Cronbach's Alpha of both combined (22 Likert scale items from strongly disagree to strongly agree) is α = .929. The questionnaire about re-listening to/re-viewing the same audio-only listening texts with (full) captions (α = .907) included 13 Likert scale items from strongly disagree to strongly agree. All items also featured multiple measures of similar attitudes so that inaccurate answers could be guarded against. Furthermore, all items were presented to the participants in the medium of instructions / official language (i.e. Turkish).

Fifty seven participants answered the questionnaires about the re-provision of the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage, and with (full) captions at the final listening stage in the HEs for FLL, which was administered immediately after using the hypermedia listening application. Majority of the participants (i.e. 52 out of 57 participants) answered the open-ended questions, as well. Answering the open-ended questions required more time and effort in comparison to ticking one or a few available options out of a group of options. Therefore, it is assumed that this was the reason why not all of the participants answered the open-ended questions. Both quantitative and qualitative data collection was anonymous. The

collected data were not shared with anyone who knew the participants. Furthermore, the qualitative data were analysed by three different researchers to avoid subjective interpretation and were categorised according to the categories that were extracted from the data itself and then applied.

**Findings**

The results of the study are presented in three parts, corresponding to the three research questions. The quantitative data were analysed with SPSS. The analysis of the qualitative data was conducted by examining the participants' responses gathered from the open-ended questions. The focus was on the shared themes among the responses. In the analysis and discussion of the qualitative data, ranges of the shared themes emerging from the qualitative data were identified. These ranges of the shared themes emerged from the qualitative data were consistent with the results of the quantitative data.

*Re-viewing the same Audio-only Listening Texts with Keywords or (Supplementary Contextual) Visuals + Keywords at the non-initial Phases of the While-listening Stage is useful*

The analysed results indicated that the participants' general perceptions of re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords were very positive (Tables 2 & 3 respectively). The participants believe that (1) keywords should be provided (M = 4. 24, Table 2) at the non-initial phases of the while-listening stage. Providing keywords pertinent to the same audio-only listening texts at the non-initial phases of the while-listening stage helps them (2) focus on listening (M = 4.35), (3) understand better  (M = 4.46), (4) learn new words (M = 4.30),  (5) understand main words better (M = 4.30), (6) learn main words (M = 4.30), (7) understand difficult words (M = 4.00), (8) learn difficult words (M = 4.09), (9) learn private names (M = 3.84), (10) learn the target language (M = 4.16), and (11) be better prepared for the target/real-world (M = 3.86).

| Items | N | Mean | Std. Deviation |
|---|---|---|---|
| 1. 'KeyWords' pertinent to the same 'audio-only listening texts' should be provided at the non-initial phases of the while-listening stage | 57 | 4.42 | .925 |
| 2. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you focus on listening | 57 | 4.35 | .767 |
| 3. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you understand better | 57 | 4.46 | .657 |
| 4. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn new words | 57 | 4.30 | .906 |
| 5. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you understand main words better | 57 | 4.30 | .999 |
| 6. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn main words | 57 | 4.30 | 1.068 |
| 7. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you understand difficult words | 57 | 4.00 | 1.254 |
| 8. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn difficult words | 57 | 4.09 | 1.090 |
| 9. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn private names | 57 | 3.84 | 1.449 |
| 10. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn the target language | 57 | 4.16 | 1.162 |
| 11. Providing 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) prepares you better for the target/real-world | 57 | 3.86 | 1.141 |

| 1 = Strongly disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly agree |
|---|---|---|---|---|

*Table 2: Mean score for the participants' general perceptions of re-viewing the same audio-only listening texts with keywords at the non-initial phases of the while-listening stage*

The participants believe that (1) (supplementary contextual) visuals + keywords pertinent to the same audio-only listening texts should be provided at the non-initial phases of the while-listening stage (M = 4. 49, Table 3). Providing (supplementary contextual) visuals + keywords pertinent to the same audio-only listening texts at the non-initial phases of the while-listening stage helps the participants to (2) focus on listening (M = 4.58), (3) understand better  (M = 4.53), (4) learn new words (M = 4.28),  (5) understand main words better (M = 4.35), (6) learn main words (M = 4.44), (7) understand difficult words (M = 4.35), (8) learn difficult words (M = 4.33), (9) learn private names (M = 4.05), (10) learn the target language (M = 4.12), and (11) be better prepared for the target/real-world (M = 3.86).

| Items | N | Mean | Std. Deviation |
|---|---|---|---|
| 1. 'Supplementary contextual visuals' (SCVs) + 'KeyWords' pertinent to the same 'audio-only listening texts' should be provided (at the non-initial phases of the while-listening stage) | 57 | 4.49 | .735 |
| 2. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you focus on listening | 57 | 4.58 | .596 |
| 3. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you understand better | 57 | 4.53 | .601 |
| 4. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn new words | 57 | 4.28 | .940 |
| 5. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you understand main words | 57 | 4.35 | 1.009 |
| 6. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn main words | 57 | 4.44 | .756 |
| 7. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you understand difficult words | 57 | 4.35 | .935 |
| 8. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn difficult words | 57 | 4.33 | 1.041 |
| 9. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn private names | 57 | 4.05 | 1.093 |
| 10. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) helps you learn the target language | 57 | 4.12 | 1.119 |
| 11. Providing 'SCVs' + 'KeyWords' pertinent to the same 'audio-only listening texts' (at the non-initial phases of the while-listening stage) prepares you better for the target-/real-world | 57 | 3.86 | 1.187 |

| 1 = Strongly disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly agree |
| --- | --- | --- | --- | --- |

*Table 3: Mean score for the participants' general perceptions of the re-viewing the same audio-only listening texts with (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening Stage*

The quantitative results of this study were supported by most of the qualitative data (i.e. data obtained from the answers given to the open ended questions by the participants). When the participants were asked: "What do you think of re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage)" and "What are the advantages and/or disadvantages of re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage in terms of understanding the listening texts and learning the target language", the following valuable comments were made:

Re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage has positive effects, is more efficient and more helpful (52 times mentioned by different participants out of 57).

> *"First time, I have encountered with such a design. Obviously, I liked it and I think it is useful because it helps us to understand better. Of course, this might not be the same case with everyone. We both hear and see. As a result, I can learn better." (Participant GR301)*

> *"As you also know, firstly we only listened to the 'audio-only listening texts'. Of course, we had difficulty in understanding. However, when we later listened to the same [audio-only] 'listening texts' with 'keywords' or 'keywords' and 'visuals', it was easier for us to understand. It is really logical to present the [audio-only] listening texts in this way because we test ourselves and develop our understanding skills. I cannot see any negative effects of such a design" (Participant GR304)*

> *"Providing 'keywords' with 'visuals' can be more effective and become more permanent. When 'keywords' are provided, this makes it easier to guess the meaning of [unfamiliar] words. (Participant GR305)*

> *"Certainly [providing the same 'audio-only listening texts' with 'keywords' or supplementary contextual 'visuals' + 'keywords'] has positive effects. It helps us better understand. At the first listening, there were no 'keywords' and 'visuals' and I had a lot of difficulty in understanding. However, when I listened to the same 'audio-only listening texts' with 'keywords' or 'keywords' and 'visuals', I better understood both in terms of auditory and visuals. Everything was quite clear." (Participant GR306)*

> *"I think it is better with 'keywords' and 'visuals'. Everyone understands in different ways. While some of us are auditory, the others are visual. We understand better when all are provided together…" (Participant GR309)*

> *"Of course providing 'keywords' is useful. Providing 'keywords' and 'visuals' is better" (Participant GR3012)*

> *"Only listening to ['audio-only listening texts'] is certainly not enough, I cannot understand enough well. Only providing 'keywords' is also not enough. However, I only understand very well when both 'keywords' and 'visuals' are provided. In my opinion, I understand better when both ['keywords' and 'visuals'] are provided. As*

*such a design meets the needs of both auditory and visual learning channels, learning becomes more permanent. I have realised that the more it meets the needs of my learning channels, the better I learn." (Participant GR3031)*

Re-viewing the same 'audio-only listening texts' with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage is useful for understanding the audio-only listening texts (40 times mentioned)

*"At the first listening, I could not understand at all. Although I listened to the [audio-only] 'listening texts' three times, I could not answer the questions. However, when I listened to the [same audio-only]'listening texts' with [supplementary contextual] 'visuals' + 'keywords' [at the non-initial phases of the while-listening stage], I could answer the questions very well. There was a huge gap between the 'audio-only listening' and the listening with 'keywords' or 'keywords' and 'visuals'" (Participant GR302)*

*"[Providing the same 'audio-only listening texts' with 'keywords' or supplementary contextual 'visuals' + 'keywords' at the non-initial phases of the while-listening stage] has positive effects. Presenting in this way is better for understanding and learning. The positive effect is that when the 'keywords' are provided, you remember the answers when you respond the questions" (Participant GR3011)*

*"Providing the 'audio-only listening texts' with 'keywords' or 'keywords' and 'visuals' helps us understand the listening texts. Presenting the [audio-only] listening texts in this way affects our understanding and learning positively" (Participant GR3013)*

*"[Providing the 'audio-only listening texts' with 'keywords' or supplementary contextual 'visuals' + 'keywords'] is useful for analysing the target language and understanding. 'Keywords' and 'visuals' are more permanent, and they are more reliable for a better result" (Participant GR3015)*

*"In my opinion, providing 'keywords' with the 'audio-only listening text' motivates the learners and helps them to understand" (Participant GR3019)*

*"I could understand very little when there were no' keywords', 'visuals'. ... I could answer only a few questions. However, when 'keywords', 'visuals' … were available, I could answer all of the questions" (Participant GR3022)*

*"Providing the 'audio-only listening texts' with 'keywords' or 'keywords' and 'visuals' makes the listening texts more understandable. Additionally, 'keywords' give us clues about the segments we do not understand or hear properly. Presenting the 'listening texts' in this way does not have any negative effect in terms of understanding and learning. Conversely, it has positive effects" (Participant GR3028)*

*"When I listened to with 'keywords' and 'visuals', I better understood. It was more understandable. Presenting [audio-only] 'listening text' in this way definitely has positive effects in terms of understanding and learning. However, if I only listen to [the audio-only listening text], I cannot understand" (Participant GR3049)*

Re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while listening stage helps learn more effectively (10 times mentioned)

*"Presenting the same 'audio-only listening texts' with 'keywords' or 'keywords' and 'visuals' has positive effects in terms of both understanding and learning. Learning through 'seeing' is the most fundamental thing for learners" (Participant GR303)*

*"… when the 'keywords' are provided, I learn better. Due to the provision of 'keywords', I could answer the questions more easily…" (Participant GR308)*

*"I don't think that [re-provision of the same 'audio-only listening texts' with 'keywords' or supplementary contextual 'visuals' + 'keywords' at the non-initial phases of the while-listening stage] has any negative effects. The listening texts that I listened to with 'keywords' or 'keywords' and 'visuals' are more permanent" (Participant GR3010)*

*"Providing the [same] 'audio-only listening texts' with 'keywords' or 'keywords' and 'visuals' can be very useful for learners. Learning will be easier for both auditory and visual learners and more importantly the acquired input can be more permanent" (Participant GR3018)*

*"[Providing the same 'audio-only listening texts' with 'keywords' or supplementary contextual 'visuals' + 'keywords' at the non-initial phases of the while-listening stage] certainly has positive effects. It is a good opportunity for those who do not understand or miss some parts while listening to. For those who do not understand, 'visuals' make it easier for them to understand words, and 'keywords' make it easier for them to learn words. I can forget what I hear / listen to, but 'visuals' and 'keywords' were more permanent for me" (Participant GR3020)*

*"…Both seeing and hearing is really effective. It is invaluable for language development. …" (Participant GR3030)*

*"When 'keywords' are provided, learning is more efficient and permanent" (Participant GR3039)*

*"When 'visuals' are provided, [the meaning of the] words become clearer and they become more permanent" (Participant GR3050)*

Re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage is useful for drawing attention to salient features of the audio-only listening texts (3 times mentioned)

*"Providing 'keywords' and [supplementary contextual] 'visuals' with the [same audio-only] 'listening texts' [at the non-initial phases of the while-listening stage] is more effective in terms of understanding and drawing attention [to salient features of the listening texts]. As a result, we understand and grasp the words the correct pronunciation of which we do not know. In short, it has a few positive effects. When there are no 'keywords' and [supplementary contextual] 'visuals', we cannot focus on and the input does not become permanent" (Participant GR3029)*

*"Providing 'keywords' help us to focus on the input and understand better. Both seeing and hearing is really effective. It is invaluable for language development. Such a design should be preferred for the development of listening" (Participant GR3030)*

*"Keywords' and 'visuals' enable us to learn salient features [of the audio-only 'listening texts']. This further enables us to answer the key points in the questions" (Participant GR3056)*

Re-viewing the same audio-only listening texts with keywords or (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stage is useful for correcting our pronunciation (5 times mentioned) and learning spelling (2 times mentioned)

*"The provision of the 'keywords' and [supplementary contextual] 'visuals' [with the same audio-only listening texts at the non-initial phases of the while-listening stage] enables us to understand more quickly. In other words, it makes it easier for us to understand the words we have difficulty in understanding because of pronunciation. It completely has a positive effect, and does not have any negative effect" (Participant GR3036)*

*"In my opinion, understanding is easier when we listen to the [audio-only] 'listening texts' with 'keywords' or 'keywords' and 'visuals' .We understand difficult words with the support of the provided 'keywords'. In this way, we learn both correct pronunciation and spelling. Providing 'keywords' help us focus on the input and understand better. Both seeing and hearing is really effective. It is invaluable for language development. Such a design should be preferred for the development of listening" (Participant GR3030)*

*"Presenting the [audio-only] 'listening text' in this way affects our understanding [of the 'listening text'] and learning [of the target language] in a positive way. It becomes easier to understand the [audio-only] 'listening text' and we understand the sentences and words the listening text features in. We learn [the correct] pronunciation and spelling. When we see the 'written form of the words', we do not forget. In particular, 'visuals' help me a lot. When presented in this way, we learn as well as it further motivates us to learn. As a result of the provision of the 'keywords', we learn new words." (Participant GR3031)*

*"Re-listening to the same 'audio-only listening texts' with 'keywords' or 'keywords' and 'visuals' better contributed to our understanding, interpreting and acquiring correct pronunciation. As a result, I could answer the questions better. While I listened to the 'audio-only listening texts', I could not answer the questions. This is the best evidence" (Participant GR3053)*

*"Providing 'keywords' and 'visuals' with the [audio-only] 'listening texts' is more effective in terms of understanding and drawing attention [to salient features of the 'listening texts']. As a result, we understand and grasp the words the correct pronunciation of which we do not know. In short, it has a few positive effects. When there are no 'keywords' and 'visuals', we cannot focus on and the input does not become permanent". (Participant GR3029)*

There were, however, several **negative remarks** emerged from the qualitative data. **All** are below (6 times mentioned).

*"Of course, it has positive effects, but understanding the 'audio-only listening texts' is better. If we could understand without the support of 'keywords' and 'visuals', that could be more effective and motivating" (Participant GR3054)*

*"As a negative effect, it can be said that [providing the same 'audio-only listening texts' with 'keywords' or supplementary contextual 'visuals' + 'keywords' at the non-initial phases of the while-listening stage] might make learners rely on what they see rather than the listening input. Apart from this, all other effects are positive. 'Visuals' are important in understanding. If the 'listening texts' meet the needs of both auditory and visual learning channels, the result will definitely be much more better" (Participant GR3025)*

*To be honest, the provision of 'keywords' and [supplementary contextual] 'visuals' [at the non-initial phases of the while-listening stage] is good for lower-level learners, but providing them every time in the same way is not good. Only 'visuals' should sometimes be provided, but 'keywords' are not useful for our listening development." (Participant GR3035)*

*"It was a very enjoyable listening. I benefitted from a lot. I think that there is no need for 'visuals'. 'Keywords' … were much more useful" (Participant GR3047)*

*"I could understand very little when there were no 'keywords', 'visuals'. …. I could answer only a few questions. However, when 'keywords', 'visuals' … were available, I could answer all of the questions. Having said that, I am not sure whether such a design is useful or not because [in real-life] while English is spoken I have to understand it without the support of 'keywords' and 'visuals'" (Participant GR3022)*

Moreover, one participant (out of 57) makes another suggestion.

*"I think that it is better if we first listen to the audio-visual version of the listening texts and later with 'keywords' in terms of understanding and interpreting. When we watch or listen to, we can miss the content. With audio visuals first and keywords later, we can focus on and interpret easily" (Participant GR3052)*

**Re-viewing the same Audio-only Listening Texts with (full) Captions at the Final Listening Stage is useful**

The analysed results of this study revealed that the participants' general perceptions of re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s) were very encouraging (Tables 4). The participants believe that (1) (full) captions for the same audio-only listening texts should be provided at the final listening stage(s) (M = 4. 67, Table 4). Providing (full) captions pertinent to the same audio-only listening texts at the final listening stage(s) helps the participants to (2) focus on listening (M = 4.56), (3) understand better  (M = 4.67), (4) understand in detail (M = 4.61),  (5) learn new words (M = 4.35), (6) understand key words (M = 4.58), (7) learn keywords (M = 4.25),  (8) understand difficult words (M = 4.25), (9) learn difficult words (M = 4.37), (10) learn correct pronunciation (M = 4.46), (11) learn private names (M = 4.23), (12) learn the target language (M = 4.11) and (13) be better prepared for the target/real-world (M = 4.05).

| Items | N | Mean | Std. Deviation |
|---|---|---|---|
| 1. (Full) Captions for the same '*audio-only* listening texts' should be available (in the application) (at the final listening stage-s-) | 57 | 4.67 | .740 |
| 2. Providing (full) captions for the same '*audio-only* listening texts' (at the final listening stage-s-) helps you focus on listening | 57 | 4.56 | .824 |
| 3. Providing (full) captions for the same '*audio-only* listening texts' (at the final listening stage-s-) helps you understand better | 57 | 4.67 | .809 |
| 4. Providing (full) captions for the same '*audio-only* listening texts' (at the final listening stage-s-) helps you understand in detail | 57 | 4.61 | .796 |

| | | | |
|---|---|---|---|
| 5. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you learn new words | 57 | 4.35 | 1.203 |
| 6. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you understand key words | 57 | 4.58 | .944 |
| 7. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you learn key words | 57 | 4.25 | 1.074 |
| 8. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you understand difficult words | 57 | 4.25 | 1.214 |
| 9. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you learn difficult words | 57 | 4.37 | .899 |
| 10. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you learn correct pronunciation | 57 | 4.46 | .946 |
| 11. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you learn private names | 57 | 4.23 | 1.137 |
| 12. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) helps you learn the target language | 57 | 4.11 | 1.359 |
| 13. Providing (full) captions for the same '*audio-only listening texts*' (at the final listening stage-s-) prepares you better for the target/real-world | 57 | 4.05 | 1.493 |
| **1 = Strongly disagree**     **2 =Disagree**     **3 =Neutral**     **4 = Agree**     **5 = Strongly agree** | | | |

*Table 4: Mean score for the participants' general perceptions of the re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s)*

The qualitative data of this study reinforced the quantitative results. When the participants were asked: "What do you think of re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s) and "What are the advantages and/or disadvantages of re-

viewing the same audio-only listening texts with (full) captions at the final listening stage(s) in terms of understanding the same audio-only listening texts and learning the target language", the following useful reactions were revealed:

Re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s) has a positive effect, is more effective and more beneficial (46 times mentioned)

*"I think [full 'captions'] are more useful. The words are in front of our eyes and we better understand [the same audio-only listening texts]. Therefore, [full] 'captions' should be available in in listening courses [at the final listening stage(s)]" (Participant GR307)*

*"Of course, I think there are advantages of ['captions']. At least, while we listen to, we miss some parts / bits. When 'captions' are available, then words are visible and we better understand the sentences" (Participant GR3012)*

*"Providing the 'listening texts' with 'captions' helps us understand and learn. At the same time, it helps us listen to what we listen to more carefully. It definitely positively affects our listening" (Participant GR3013)*

*"I think 'captions' are very important with listening texts. 'Audio flies and writing lasts'. For example, if the listening text is unfamiliar and if it features in a wide range of words and private names, 'captions' must be available in such cases" (Participant GR3014)*

*"Having both audio and visual ['captions'] representations of the listening texts, and also as a result, being able to answer the questions can make learning more permanent. I think this is a very good method [design]. [Providing 'captions'] makes learning motivating, … more practical and understandable". (Participant GR3015)*

*"It [Providing full 'captions' at the final listening stage(s)] enables us to follow and understand the topic we listen to" (Participant GR3016)*

*"I think the third design [i.e. the re-provision of the same audio-only 'listening texts' with full 'captions' at the final listening stage(s)] is more effective for us. Rather than listening, seeing is more permanent in terms of learning because as we could see 'captions', I realised that what I listened to was rather easy, which helped us learn even if they were a few words" (Participant GR3020)*

*"Listening to the [same audio-only] 'listening texts' with [full] 'captions' was very useful. I could answer all of the questions, as I followed / focussed on 'captions'" (Participant GR3021)*

*"In my opinion, [full 'captions'] positively affect us, as listening to with 'captions' both improves our pronunciation and enables us to learn the correct pronunciation. And we understand the [same audio-only] listening text in general. Accordingly, we can answer the questions better and our listening develops" (Participant GR3026)*

*"I think [full 'captions'] make [the same audio-only listening text] more understandable. [Full 'captions'] enable us to catch the words we have missed and are useful from the point of view of [acquiring correct] pronunciation" (Participant GR3025)*

*"The provision of 'captions' is really useful in terms of pronunciation, being able to both see and hear. It is very good. I would be happy to see this in lessons, as well" (GR3025)*

*"As our listening is limited, using 'captions' with listening texts helps us understand. It also makes it easier for us to learn words" (Participant GR3037)*

Re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s) is useful for understanding the same audio-only listening texts (27 times mentioned)

*"I was very happy with listening with [full] 'captions' [at the final listening stage(s)] and I think it was very useful. We might not understand even if we listen to [the same audio-only listening texts] several times. However, when [full] 'captions' are available, at least we can understand easily. I think it is more useful in this way [re-viewing the same audio-only listening texts with full 'captions' at the final listening stages] (Participant GR309)*

*"Of course, it is more effective in terms of understanding and learning because we can see the real words and sentences. Additionally, it is very important in terms of [acquiring correct] pronunciation, as well. As foreign words are not pronounced as they are written, they might not be understood via only listening." (Participant GR3017)*

*"I am definitely in agreement with the provision of 'captions' in [adaptable hypermedia listening language] software because it helps us understand the main theme of the topic and the difficult words." (Participant GR3019)*

*"[Full 'captions'] are positive for us, as we cannot sometimes follow the speech. This [the provision of the full 'captions' with the same audio-only listening texts at the final listening stage(s)] helps us a lot to understand [the same audio-only listening texts]. Additionally, we learn how each word is pronounced" (Participant GR3023)*

*"Due to 'captions', we understood most of the [same audio-only] listening texts. Words became more permanent". (Participant GR3027)*

*"I think listening to the same [audio-only] 'listening texts' with [full] 'captions' contributes to our understanding to a great extent. However, we get relied on 'captions' rather than focussing on speech. That's why it has both positive and negative effects" (Participant GR3028)*

*"In my opinion, 'captions' should definitely be provided for listening. I understood and learnt all the words that I could not understand at the beginning due to [the provision of] 'captions'. Due to [the provision of] 'captions', I learnt the spelling and pronunciation of the new words. To improve our listening, 'captions' must definitely be made use of. I could not see any negative effects of the provision of [full] 'captions' with the [same audio-only] 'listening texts' [at the final listening stage(s)] ".  (Participant GR3030)*

*"'Captions' are better when we listen to the' listening texts' in terms of understanding and learning. With 'captions', we see the words and thus they become permanent. We learn pronunciation and spelling. The most important thing is that 'captions' enable us to understand the 'listening text' much more. ['Captions'] help our learning more" (Participant GR3031)*

*"In my opinion, [listening to with full] 'captions' was more effective. Only listening is definitely not enough. I understood better with [full] 'captions'" (Participant GR3034)*

*"When 'captions' were provided, I better understood the bits and the words that I could not understand before. The text became more permanent" (Participant GR3039)*

*"I saw the positive effects of 'captions'. In my opinion, with 'captions' is easier to understand. However, if we get used to 'captions', we might have difficulty in listening without 'captions'" (Participant GR3043)*

*" 'It [Re-viewing the same audio-only listening texts with full 'captions' at the final listening stage(s)] helps us better understand what we listen to" (Participant GR3044)*

*"Listening to with 'captions' was more productive. To me, this was the best way of understanding. I listened to [the same audio-only listening texts] several times, but with [full] 'captions' it becomes more understandable" (Participant GR3049)*

*"In my opinion, 'captions' must definitely be available. Learning becomes more permanent. Understanding becomes clearer. We do not forget. We also learn new words" (Participant GR3051)*

*"'Captions' mean 'easily understanding for me'. To understand and interpret easily, I need 'these keys' when I watch films or video because I am not yet at high level. We can miss what they say or want to express when we listen to [audio-only listening texts without 'captions']" (Participant GR3052)*

*"Of course, the provision of [full] 'captions' with a listening text helps us understand what we listen to easily. [With full 'captions'] the words we have difficulty with are understood better. We might not realise when we listen to, but with [full] 'captions' we can learn very beautiful words and structures" (Participant GR3056)*

Re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s) helps learn English, (correct) pronunciation, spelling and private names more effectively (10 times mentioned)

*"[Provision of full]'captions' [with the same audio-only listening texts at the final listening stage(s)] help us learn English more…" (Participant GR306)*

*"My opinion about listening to [the same audio-only listening texts] with [full] 'captions' [at the final listening stage(s)] is that it is definitely useful for learners. It is useful in terms of learning both words and correct pronunciation" (Participant GR3018)*

*'Captions' are very effective in acquiring correct pronunciation, private names and unknown words" (Participant GR3036)*

*"…Due to [the provision of full] 'captions', I learnt the spelling and pronunciation of the new words. To improve our listening, 'captions' must definitely be made use of. I could not see any negative effect of the provision of 'captions' with the [same audio-only] listening texts [at the final listening stage(s)]". (Participant GR3030)*

*"…With 'captions', we see the words and thus they become permanent. We learn pronunciation and spelling… [The provision of full 'captions' with the same audio-only listening texts at the final listening stage(s)] help our learning more" (Participant GR3031)*

*"Of course, listening to with [full} 'captions' was more permanent in comparison without 'captions'. It had positive effects" (Participant GR3045)*

*Due to {full] 'captions', I have learnt both words and [correct] pronunciation. Due to being both auditory and visuals, I could answer the questions" (Participant GR3053)*

Re-viewing the same audio-only listening texts with (full) captions at the final listening stage(s) is useful for understanding (difficult) words and private words (5 times mentioned)

*"I am definitely in agreement with the provision of [full] 'captions' in [language] software because it helps us to understand the main theme of the topic and the difficult words." (Participant GR3019)*

*"…It [Providing full 'captions'] also makes it easier for us to learn words" (GR3037)*

*"The provision of [full] 'captions' is very important. It helps us learn different words and helps us learn more words…" (GR3046)*

*"… [With full 'captions'] The words we have difficulty with are understood better. We might not realise when we listen to, but with [full] 'captions' we can learn very beautiful words and structures" (GR3056)*

*"[Full] 'Captions' are very good in distinguishing words. If we often listen to with [full] 'captions', we improve both words and English. Today, [with help of full 'captions'], we better understood" (GR3057)*

Re-listening to/re-viewing the same audio-only listening texts with captions at the final listening stage(s) is useful for drawing attention to the salient features of the listening texts (1 times mentioned)

*"Listening with [full] 'captions' is more permanent in understanding the paragraph [the speech]. 'Captions' draw attention, that's why, in my opinion, 'captions' should be available" (Participant GR3029)*

However, there were some negative, but useful, comments emerged from the qualitative data, all of which are below (10 times mentioned)

*"At first when captions are not available, it is difficult to understand what we listen to, but when captions are unavailable, we have to focus on more. When captions are available, audio becomes secondary source and captions become primary source" (Participant GR3010)*

*"'Captions' help us learn English more. However, this doesn't mean that we focus on fully. When 'captions' are not available, learners focus on better" (Participant GR306)*

*"There are disadvantages of 'captions'. When 'captions' are available, [learners] do not listen to [the listening texts] a lot [i.e. learners do not focus on audio]" (Participant GR3011)*

*"... However, we get relied on 'captions' rather than focussing on speech. That's why it has both positive and negative effects" (Participant GR3028)*

*"['Captions'] might have negative effects. We make ourselves lazy, but we understand better with 'captions' because we are not used to listening [to the listening texts in English]" (Participant GR3032)*

*"I think 'captions' are not good because when I read 'captions', I cannot learn listening and focus on what I hear". (Participant GR3033)*

*"Of course, the provision of 'captions' with a difficult listening text can be useful, but the provision of 'captions' in all cases is wrong" (Participant GR3035)*

*"When 'captions' are available, I cannot listen to [focus on] the listening texts because I follow 'captions' and this does not benefit me in any way in terms of listening. However, my pronunciation improves due to 'captions'" (Participant GR3040)*

*"… However, if we get used to 'captions', we might have difficulty in listening without captions" (Participant GR3043)*

*"Positive effects, but I do not want to learn English or listening in this way. Eventually, when we speak to someone, there will not be any writing ['captions'] and we shall have difficulty again. However, if this design teaches something for future, then I think it will be very positive" (Participant GR3054)*

### Differences between the Participants' Perceptions and their Characteristics, and Correlations between the Participants' Perceptions

In terms of general perceptions of the participants towards the provision of the (supplementary contextual) visuals + keywords with the same audio-only listening texts at the non-initial phases of the while-listening stage(s), the differences between 'computer literacy' were statistically

significant (Table 5). The participants who had higher 'computer literacy' seemed to have more positive general perceptions towards the provision of the (supplementary contextual) visuals + keywords with the same audio-only listening texts at the non-initial phases(s) of the while-listening stages).

| | | | 2,550[a] | **0,043*** |
|---|---|---|---|---|
| Computer Literacy | | | | |
| | | | | |
| Level 1- Basic user | 4,05 | ,62 | | |
| Level 2 | 4,00 | ,58 | | |
| Level 3 | 4,18 | ,51 | | |
| Level 4 | 4,71 | ,27 | | |
| Level 5- Proficient user | 4,47 | ,50 | | |

*Note. α=0.05;\*ᵃAnova; a: 0,05;\* Difference is statistically significant*

*Table 5: α=0.05;\* ANOVA for perceptions towards the provision of (supplementary contextual) visuals + keywords with the same audio-only listening texts at the non-initial phases of the while-listening stage(s) in HEs for FLL in terms of 'computer literacy'*

In terms of the participants' general perceptions towards the provision of the keywords or (supplementary contextual) visuals + keywords with the same audio-only listening texts at the non-initial phases of the while-listening stage(s), and (full) captions with the same audio-only listening texts at the final listening stage(s), the correlations between the perceptions were statistically significant (Table 6). The participants seem to have high positive general perceptions (Tables 6 & 7) towards the provision of the keywords, (supplementary contextual) visuals + keywords, and (full) captions with the same audio-only listening texts. The participants seem to prefer (a) mostly the provision of (full) captions with the same audio-only listening texts at the final listening stage(s), (b) secondly most (supplementary contextual) visuals + keywords, and (c) thirdly most keywords with the same audio-only listening texts at the non-initial phases of the while-listening stages in HEs for FLL.

|  |  | KeyWords | Captions | (Supplementary Contextual) Visuals + Keywords |
|---|---|---|---|---|
| Keywords | r | 1 | 0,626 | 0,958 |
|  | p |  | 0,001* | 0,001* |
| Captions | r |  | 1 | 0,670 |
|  | p |  |  | 0,001* |
| (Supplementary Contextual) Visuals + Keywords | r |  |  | 1 |

*Note. *Correlation is significant; a: 0,05; Pearson Correlation test*

*Table 6: Correlations between the Participants' Perceptions towards the Provision of Keywords, and (Supplementary Contextual) Visuals + Keywords with the same Audio-only Listening Texts at the non-initial stages, and (full) Captions with the same Audio-only Listening Texts at the final stages in HEs for FLL*

|  | $\bar{X}$ | SD |
|---|---|---|
| Keywords | 4,23 | 0,52 |
| (Supplementary Contextual) Visuals + Keywords | 4,24 | 0,51 |
| Captions | 4,48 | 0,43 |

*Table 7: Overall means of the participants' perceptions towards the provision of keywords, and (supplementary contextual) visuals + keywords with the same audio-only listening texts at the non-initial phases of the while-listening stages, and (full) captions with the same audio-only listening texts at the final listening stages in HEs for FLL*

## Discussion and Implications

### Dual-coding in Designing Audio-only Listening Texts in HEs for FLL

The results of the current study match the existing findings of similar studies (Turel, 2015b, 2014a, 2011; Hsu et al., 2013; Türel, 2010a; Cárdenas-Claros, 2009; Paivio, 2006; Purnell & Solman, 1991; Chun, & Plass, 1997). The current results further contribute to the existing body of knowledge in terms of the role of dual-coding in designing hypermedia listening applications (i.e. more precisely audio-only listening texts) in particular, and instructional design and CALL in general.

In the hypermedia listening application, audio-only listening texts were provided at the initial phases (i.e. at the first phases) of the while-listening stages. At the non-initial phases (of the while-listening stages), audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords were provided. At the final listening stages,

audio-only listening texts + (full) captions were provided. What this meant was that: more than one concurrent digital element on the same computer platform (i.e. audio-only listening texts + keywords, audio-only listening texts + supplementary contextual visuals + keywords, audio-only listening texts + full captions), which aimed to teach one thing (thus, at least one available digital element was redundant) was provided at the non-initial phases of the while-listening stages, and the final listening stages. Not only did such a design of the audio-only listening texts in a hypermedia environment for FLL correspond with the dual-coding theory, the generative theory of multimedia (Ginther, 2002; Mayer, 1997) and the redundancy hypothesis (Al-Seghayer, 2001; Sherwood et al., 1987), but such provisions also provided more paths of recall (Al-Seghayer, 2001; Paivio, 1986).

The provided hypermedia listening application featured different digital media elements (i.e. audio-only listening texts, keywords, supplementary contextual visuals, captions, their optimum combinations, tasks, instructions, simultaneous feedback, local help/guidance, glossary, and so on). The hypermedia listening application also provided the participants with the opportunity to work and answer in different ways, which pedagogically matches the findings in the field of learners' learning style preferences (Carson & Longhini, 2002; Reid, 1987). The assumption underlying this is that learners may be visual, auditory, kinaesthetic or tactile. While, for instance, audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords meet the needs of visual learners (and auditory learners), audio-only listening texts meet the needs of auditory learners. The results also psychologically match common sense; as such varied combinations of the same listening texts in the same hypermedia listening application can avoid boredom and maintain motivation. Pedagogically, it is suggested that "a more enriched learning experience occurs when LLs [language learners] are presented with different styles of learning in both content and teaching style"' (Brickell, 1993, p.2), a challenge which is "often neglected" by instructional designers (McLoughlin, 1999, p.1). The results of the current study further matched the other findings in that the participants overwhelmingly appreciated the provision of the same audio-only listening texts in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while listening stage(s), and audio-only listening texts + (full) captions at the final listening stages in the hypermedia listening application for FLL, as most learners are visual in their learning (Reid 1987, pp. 96-7).

The provision of the same audio-only listening texts in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages, and audio-only listening texts + (full) captions at the final listening stages in the same hypermedia listening application for FLL corresponds with the requirements of working memory, as it consists of separate processors for

auditory and visual information (Kalyuga, 2000; Baddeley, 1992). Providing listening input that can be processed using senses of both hearing and vision can expand limited working memory. Since the provided listening texts in the hypermedia listening application used in this study feature input that requires the use of both hearing and vision, the results match the cognitive load theory (Kalyuga, 2000; Sweller, 1999), as such a provision of the listening input decreases cognitive load because they consist of two different information sources (i.e. audio + keywords, audio + supplementary contextual visuals + keywords or audio + captions) each of which requires the use of a separate learning processor (i.e. hearing, vision). Furthermore, the provided listening input was designed effectively, as it featured a combination of both learner control and program control. This is considered more beneficial for FLL acquisition (Robinson, 1989; Trinder, 2002). These might be the reasons why the above mentioned particular design of the audio-only listening texts in the specific hypermedia listening application for FLL was appreciated overwhelmingly by the participants.

The results of the current study also substantiate the similar findings in the field of FLL (Turel, 2014b; Herron et al., 2002, p. 37; Ginther, 2002, pp. 133 - 67; Al-Seghaye,r 2001, p. 203; Brett, 1997, pp. 46-7; Secules et al., 1992, pp. 480-90; Rubin, 1994; Mueller, 1980, p. 340; Omagigo, 1979; Arnold & Brooks, 1976, pp. 713-16; Casambre, 1962, pp. 51-55). Visuals generally "facilitate the understanding of intermediate learners, which is likely to result in FLL. The above mentioned quantitative and qualitative data of this study also clearly reveal that the participants are overwhelmingly in favour of the provision of the same audio-only listening texts in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages, and audio-only listening texts + (full) captions at the final listening stage(s) in HEs for FLL. Therefore, additionally, the results match the comprehension input hypothesis (Türel, 2010a, p. 1610). Furthermore, the results match what pointed out by Peter (1994, p. 90) in that it is said that relevant information around the video stage area in HEs can be very useful. Moreover, the results match Brett's findings (1997, p. 46-7) in that learners regard the combination of different digital learning elements most beneficial, and visuals (i.e. pictures) secondly most.

The results of the study are also consistent with the social learning theory (Robinson, 1989, pp. 119-33; Carroll, 1977, p. 507). The underlying assumption is that repeated exposure to similar or parallel listening texts contributes to learning. Here, the participants are in favour of re-listening to/re-viewing the same audio-only listening texts in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages, and audio-only listening texts + (full) captions at the final listening stages.

Such effective combinations can facilitate recognition, comprehension and learning (Jones & Plass, 2002, pp. 546-61; Al-Seghayer, 2001, pp. 202-32; Carroll, 1977, p. 509), as learners recall better when they are assigned to combined elements and the effects of visuals are much longer for pictorials, which is fully supported in this quantitative and qualitative study, as well. Such a combination is more likely to lead to acquisition (Long 1983, p. 138, Carroll 1977, p. 500).

All participants of the current study were computer literate, which is the case with most of today's students-, who are digitally-fluent and competitive, and therefore enjoy working with such HEs-. Thus, the use of the provided hypermedia listening application for FLL responds to such learning demands and differences to accommodate the digitally literate, wise and efficient learning style preferences (Türel, 2013; Duncan-Howell, 2012). This might be another reason why the participants appreciated the provision of the same audio-only listening texts in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages, and audio-only listening texts + (full) captions at the final listening stages in the hypermedia listening application for FLL.

Implications for the use of Hypermedia Environments, and effective and efficient Design of Audio-only Listening Texts in such Environments for Intermediate Language Learners

It is astonishing that not only are HEs still not widely used at all in (some) educational institutions, but also they are not integrated into most classrooms and FLL centres. In this study, for example, 84.2% of the participants stated that they had never used any language software before, which matches other studies (Türel, 2014, p. 179; Bax, 2003). For the use of HEs for intermediate language learners (as well as for other level learners), the implication is:

We need to, and have to, make use of and integrate HEs as well as all pertinent components of information and communication technology and educational technology in all areas of education as much as possible. These suggestions are practical recommendations not only for the target educational institution, but also for all Higher Education Institutions in Turkey as well as in other countries. Many institutions do not still have sophisticated structural factors as well as do not make efficient use of educational technology at different levels of education (Türel, 2013, p. 493). The target educational institution seems to be very slow in "taking the fullest advantage of the potential benefits that educational technology can offer at tertiary level", as mentioned in a previous study (Türel, 2013, p. 493). Such suggestions are also emphasized by many similar studies (e.g. Buchanan, 2013; Goktas, Yildirim, & Yildirim, 2009; Usluel & Seferoglu, 2004).

For the design and production of effective and efficient adaptive hypermedia listening applications for intermediate language learners (in terms of audio-only listening texts), the implications are:

At the initial phases (i.e. at the first phases) of the while-listening stages, comprehensible but slightly challenging audio-only listening texts + tasks should be provided and language learners should be required as well as encouraged to listen to the same audio-only listening texts a few times (when needed) and complete the pertinent gradual tasks.

At the non-initial phases of the while-listening stages, the same comprehensible but slightly challenging audio-only listening texts should be provided in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords accompanied with gradual tasks. Language learners should be required as well as encouraged to listen to/review the provided listening texts in their new dual-coded forms and complete the pertinent accompanying gradual tasks.

At the final listening stages, the same comprehensible but slightly challenging audio-only listening texts should be provided in the form of audio-only listening texts + (full) captions accompanied with gradual tasks. Language learners should be required to listen to/review the provided listening texts in their new dual-coded forms (i.e. audio-only listening texts + full captions) and complete the pertinent accompanying gradual activities.

Why should varied combinations of the same audio-only listening texts be provided at different phases and stages of listening in HEs for FLL? The underlying assumption of providing audio-only listening texts at the initial listening phases (i.e. the first phases of the while-listening stages) is that "pedagogically, language learners should not be spoon-fed. Language learners, instead, should be guided, directed and motivated to try to understand by their own initially" (Turel, 2015b, p.52). Such a provision "requires language learners to make more effort to process and understand the listening texts on their own (i.e. meaning-negotiation process)' (Turel, 2015b, p. 52). This is also the requirement of the depth processing theory. This theory suggests that without enough effort (deep processing) information will be forgotten (Craik & Lockhart, 1972).

In the same way, the assumption underlying suggesting the provision of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages is that visuals (i.e. keywords or supplementary contextual visuals + keywords) provide 'a more enriched learning experience', as discussed above in more detail.

Likewise, the reasons for suggesting to provide audio-only listening texts + (full) captions at the final listening stages in HEs for FLL is that such a design gives learners the opportunity to tease out why they cannot understand what they could not. Moreover, at the final listening

stages, language learners should be advised "to make maximum use of (full-) 'captions' to be fully familiar with different authentic aspects of the input so that not only they improve their listening, comprehension and listening skills, but also be better prepared for 'real-life'…" (Turel, 2015b, p. 52). Furthermore, there is a negative correlation between caption reliance and FLL achievement (Leveridge & Yang, 2013). What this means is that, "… the presence of captions at initial stages can cause cognitive overload in terms of learning channels. This can result in ignoring the main element (i.e. audio) in terms of listening at initial stages. The unavailability of the captions at these stages … can enable language learners to focus on better what they hear (in case of audio-only listening texts) and hear and see (in case of audio-visual listening texts)" (Turel, 2015b, p.66). Not only does the availability of captions at initial stages in hypermedia listening application "cause learners to rely on what they see rather than what they hear, as the visual sense is in general more improved than auditory, but the availability of captions [at the initial stages] can also make language learners to be dependent on them" (Turel, 2015b, p.66). Thus, audio-only listening texts + (full) captions should only be provided at the final listening stages in HEs for FLL.

The above instructional design suggestions (i.e. provision of audio-only listening texts at initial phases of the while listening stages, audio-only listening texts + keywords or audio-only listening texts + supplementary contextual visuals + keywords at non-initial phases of the while-listening stages, and audio-only listening texts + full captions at final listening stages) would have a positive enhancement of motivation, learners' listening development and on preparation for the real target-world. Ignoring these practical suggestions, however, can lead to poor motivation, less comprehension and ineffective learning. The assumption underlying this is that attitudes are consistently related to achievement (Masgoret & Gardner, 2003, pp. 123-63; Linebarger, 2001, pp. 288-298; Baltova, p. 2000; Chapelle & Jamieson, 1991, p. 43). Additionally, learning style preferences, different hypothesis (i.e. noticing hypothesis,) and theories (i.e. the dual-coding theory, the attention theory, the comprehension input theory), instructional design models (Turel, 2021c), epistemology, senses of human beings, the concern in the field of HEs and findings (in the field of visuals, hypermedia, audio), authenticity, the realities of the real target-word and common sense require the use of varied combinations of (audio-only) listening texts at different phases of the while-listening stages and final listening stages for effective and efficient design of audio-only listening texts in adaptive hypermedia listening applications for FLL purposes.

In sum, the implication is to provide intermediate language learners with the opportunity to re-listen to/re-view the same comprehensible but slightly challenging audio-only listening texts with visuals (i.e. audio-only listening texts + keywords or audio-only listening texts + supplementary contextual visuals + keywords at the non-initial phases of the while-listening stages, and audio-only listening texts + full captions at the final listening stages). The

underlying assumptions are (a) the above discussed reasons, and (b) such a design provides a repetitious exposure at different phases of listening with different features of the same listening input each time, which is one of the invaluable factors in FLL. Such an instructional design can be a positive enhancement of better understanding and efficient listening development as a part of FLL process.

However, while providing intermediate language learners with the opportunity to re-listen to/re-view the same audio-only listening texts with additional visuals (i.e. keywords, or supplementary contextual visuals + keywords at the non-initial phases of the while-listening stages or full captions at final listening stages), hypermedia developers should not ignore the requirements of the cognitive load theory (Kalyuga, 2000, p. 161; Sweller, 1999) and working memory. In short, hypermedia developers need to be precise and keep the balance. In short, as a Kurdish proverb says: "Plough deeply, neatly but do not hurt the oxen". Failure to take into account such important implications can decrease the effectiveness of multiple modalities in providing the same audio-only listening texts with keywords, (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages or with (full) captions at final listening stages in adaptive hypermedia listening applications for FLL. Not only can this decrease working memory resources available for learning, but it can also inhibit foreign language acquisition (Kalyuga, 2000, pp. 161-72).

Further research should investigate whether re-provision of the same audio-only listening texts in the form of audio-only listening texts + keywords or audio-only listening texts + (supplementary contextual) visuals + keywords at the non-initial phases of the while-listening stages, and audio-only listening texts + (full) captions at final listening stages in adaptive hypermedia listening applications for intermediate language learners improves listening development and contributes to FLL or not.

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