



Constraining issues in face-to-face and Internet-based language testing

Problemas en la realización de exámenes de idiomas presenciales y online

Jesús García Laborda,
Elena Alcalde Peñalver,

University of Alcala, Spain

Journal for Educators, Teachers and Trainers, Vol. 9 (2)

<http://www.ugr.es/~jett/index.php>

Date of reception: 06 October 2018

Date of revision: 29 November 2018

Date of acceptance: 24 de December 2018

García Laborda, J. & Alcalde Peñalver, E. (2018). Constraining issues in face-to-face and Internet-based language testing. *Journal for Educators, Teachers and Trainers*, Vol. 9(2), pp. 47 – 56.



Journal for Educators, Teachers and Trainers, Vol. 9 (2)

ISSN 1989 – 9572

<http://www.ugr.es/~jett/index.php>

Constraining issues in face-to-face and Internet-based language testing

Problemas en la realización de exámenes de idiomas presenciales y online

Jesús García Laborda, jesus.garcialaborda@uah.es

Elena Alcalde Peñalver, e.alcalde@uah.es

University of Alcalá, Spain

Abstract

Despite the increasing importance of language testing, technology design matters related to testing have hardly been addressed in academic research, yet not enough has been written on test-taking anxiety related to computerized speaking tests. Although students nowadays are digital natives, in our experience they seem to experience a significant level of anxiety when facing Internet-based oral. This research addresses an observational study of 67 students at the University of Alcalá who took a computer-delivered exam. The study concludes that despite students growing up with computers in their lives, we are far from invisible interfaces and independence when it comes to the way an exam is delivered. The results of this research study can shed light on what needs to be revised in computer or internet speaking tasks in high-stakes language tests

Resumen

A pesar de la creciente importancia de los exámenes de idiomas, los asuntos relacionados con el diseño tecnológico aplicados a la realización de estas pruebas cuando se realizan por ordenador apenas se han abordado en la investigación académica, y no se han publicado suficientes estudios sobre la ansiedad del estudiante a la hora de realizar pruebas orales de idiomas en frente de un ordenador. Aunque podemos considerar que los estudiantes de hoy en día son nativos digitales, la experiencia nos muestra que estos manifiestan un importante nivel de ansiedad a la hora de realizar pruebas orales de idiomas a través de Internet. En este artículo se analizan los resultados de un estudio observacional realizado con una muestra de 67 estudiantes de la Universidad de Alcalá que hicieron una prueba de idioma por ordenador. El estudio concluye que, a pesar de que los estudiantes crecen con los ordenadores y están familiarizados con los mismos, aún estamos lejos de conseguir interfaces invisibles y de la independencia en cuanto a la forma en que se entrega un examen. Los resultados de este estudio de investigación pueden arrojar luz sobre lo que necesita revisarse a la hora de diseñar exámenes de idiomas que se realizan a través del ordenador

Keywords

Language testing; Computer-delivered exam; Language learning

Palabras clave

Exámenes de idiomas; Exámenes por ordenador; Aprendizaje de idiomas

1. Introduction

Computer-based languages tests are common in education today (Chapelle and Voss, 2016; Yu & Zhang, 2017). Recent work in this area has looked at the use of devices such as mobile phones (García Laborda, Magal Royo, Litzler and Giménez López, 2015) or tablet PCs (García Laborda, Magal Royo and Bakieva, 2016). Excellent reviews have analysed some of the reasons for their overwhelming use. Some of the advantages related to it are their reduced cost, rapidness to mark tests and the inclusion of contextual videos to help students understand what they need to do (García Laborda, 2007). Today, it is hard to understand the significant advances in high-stakes language tests such as tests for citizenship, placement of international students, university entrance examinations and many more without the influence of the facility of delivery of computer or web tests. Although computer language tests differ from web-based tests in their design and retrieval, for practical purposes both types have been considered in this paper to be similar enough not to make a distinction.

Despite a number of technological implementations (Labi, 2006), García Laborda, Magal Royo & Carrasco (2010) considered a few years ago that computer-based testing would completely replace pen and paper in just a few years (Dooey, 2008; Tahmasebi & Rahimi, 2013). However, reality has proved an unexpected co-existence of both ways of delivery. Thus, the question is why these pen-and-paper tests are still among us. Some factors that may affect this presence are related to the high age of test takers, the incapability of places in the third world to have good Internet access, obsolete hardware in some schools, wi-fi defective or weak connections. However, these may not actually explain the case for traditional exams in developed countries (at least, not always). Thus, it is necessary to get to know what the constraints are in foreign language testing. This paper addresses the observations done in the OPENPAU research project on computer-based University Entrance Examination between 2011 and 2016.

2. Literature review

Language tests have been traditionally contrasted against pen-and-paper foreign language tests. Khoshshima, Hosseini & Toroujeni (2017) consider that in most cases the interest has been placed on converting traditional paper tests into computer delivered ones. However, they believe that computer-based language tests may not measure “*Foreign Language only*” but other aspects as well. Obviously, if this is true the validity of the exam would be jeopardized. According to Schneberger, Amoroso & Durfee (2007) the drawbacks introduced by the use of computers can be overcome by training and an adequate knowledge of the test. García Laborda, Litzler, Amengual Pizarro, García Esteban & Otero de Juan (2017) observed in a study on the APTIS test that when students know well what they are expected to do in a test and are very familiar with the candidate’s instructions book, their scores improve. Mei, Brown & Teo (2018) suggest that there is an increasing acceptance of the use of technology in the English as a Foreign Language classroom and that leads to better training in assessment through computers. Thus, as it can be seen, knowing the skills that can be more accessible is a key issue. Coniam (2006; 2009) describes how to write listening items for language tests. He also implies that listening, especially with multiple choice questions, is more accessible than other methods. The use of multiple-choice items facilitates delivery especially in adaptive testing (He & Min, 2017) but may well put the validity of a four-skill language test at stake since multiple choice language knowledge in real life does not exist. Besides, according to Odo (2012) familiarity with computers facilitates test performance. This is especially important because the increasing use of adaptive language tests is due to the fact that they make it easier to create new items and this can be done at a lower cost.

García Laborda & Magal Royo (2009) researched the facility that senior teachers had to adapt to computer-based tests. They found that even older teachers would be accepting to orientate their teaching towards computer-based exams if they are trained properly. In a three-month training course, they observed that teachers are willing to respond positively if they are shown the functional and beneficial aspects of using computers that way.

Fox & Cheng (2015) studied some of the issues that unsuccessful IB TOEFL test takers referenced as part of their personal experience with the test. Among the most significant aspects, they mention speediness, test anxiety, and test preparation. Naturally, these aspects have been found in current literature on the topic and Fox & Cheng include them in their paper. However, they fail to explain the issues that have to be specifically considered. Like other papers, this one also ignores the important issue of class observation done by researchers. Another important study was done by Zhan & Wan (2016) who report on students' experience when preparing for a listening and speaking test (CELST). Thus, it was also important to get to know how teachers prepare their students for computer tests. García Laborda, Magal Royo & Enríquez Carrasco (2010) as well as Liu & Kleinsasser (2015) suggest that what seems to be a crucial aspect is teachers becoming aware of technology as well as getting the training to specifically address the necessary computer skills to their students through classroom activities. Gebril & Eid (2017) suggested a number of activities to prepare for online high-stakes tests. Teachers also mentioned that high-stakes tests may lead to negative washback (Messick, 1996; Popham, 2001) and put the emphasis on training techniques and test skills rather than focusing on learning the language.

As seen in this review, it would be desirable to inform teachers about the most significant aspects to consider when training students for language tests based on the difficulties they have when taking them and how to solve some of the problems that derive from it. This paper intends to respond to these two questions.

3. Method

3.1. Participants

The sample consisted of 67 students. Observations were done in three high-schools in Madrid and two in Guadalajara (Spain). Data collection was done on a research diary and, additionally, some of the parts of the research were videorecorded. The schools were categorized as average in the compulsory University Entrance Examination English scores. This observational study intends to address two main questions from the researcher's perspective:

- 1) What are the difficulties that test takers have when taking an online test?
- 2) How can some of these problems improve?

This research involves the presence of the researcher and his observation may bias the research. A special effort has thus been made to verify the observations against the recorded videos of the observed experiences. Moreover, despite this potential bias, it has been especially important to understand and record the context and the interaction with the test and the computer. This observational experience will open new questions and research for future experiences that have not been implemented yet. The methodological approach hereby followed corresponds to Bryman (1988). The observations correspond to the OPENPAU project (2011-2016).

3.2. Procedure

As already said, the researcher used observational methods to collect ground notes on students' use and interaction. Each exam session lasted two hours, usually in two shifts due to the number of computers or the wifi capacity when using tablet PCs. During each visit, students were identified by a number code in order to track them, although this information may not be necessary for this paper. Before the visit, the research team was unaware of the situation in each high-school. Only the technicians of the research team were able to see the hardware and connections in advance. Although other publications have informed about the results of the OPENPAU, this is actually the first time that constraints are specifically addressed.

The researcher operationally annotated different modes of interaction despite the number of occurrences in the research. Annotations were classified according to the different skills. However, the most significant observations refer to the speaking section.

4. Results and discussion

Testing requires a state of slight positive anxiety. In the observations, two types of attitudes were observed. While most students showed relative anxiety, a few actually evidenced high anxiety because of certain discomfort while taking the test. This discomfort was due to the following factors:

- Time pressure. This feeling was emphasized by the presence of a clock in the interface (like in all computer-based tests). This is obviously very different from pen-and-paper tests where the clock may be in front of test takers and increase their anxiety (Roever, 2006; Liu et al., 2010; Namdar & Bagheri, 2012; David, 2016). A second matter in this sense is that in a traditional exam students generally do not need to “*pack*” their oral responses in a given time. We observed, for instance, that the guide to a number of the Cambridge Suite exams recommend not only what and how to respond but to adjust the response to the given time. Thus, students have the feeling that they have to keep speaking until the time is reached.
- Lack of interaction. This has been mentioned in a number of papers such as the one published by Qian (2009) but we found that most students do not hesitate to interact with semi-communicative videos especially when addressing descriptions. In another research study done with French students in the Pennsylvania State Examinations at State College High School in 2013, the researcher observed that when the input of the test task is not visually supported, results tend to be more discrete.
- Problems with body language. We even observed students using their body language (Chen & Wang, 2008). Therefore, hesitation or “*emptiness*” may well be associated to personality styles. In a different research study with the APTIS test, it was considered that the least and the most extroverted students were more fluent and used more body language when doing descriptions in the speaking section.
- Feeling unheard. Additionally, it has been observed that in paired interviews there is considerable support and interaction not only verbally but also through body language which is missing in online testing (Ockey, 2009). A number of students mentioned that they lack the motivation to answer to questions prompted by a video with little expectations to communicate meaningfully.
- “*Dehumanization*” (nobody could care about what they said). As in the previous point, the lack of communication is connected to dehumanization where there can be repulsion towards what they are doing. In extreme situations research suggests that this fact could lead to lowering their scores.
- Prompts cannot replace human presence. Although a number of studies have intended to provide evidence that videos in computer-based testing can help to contextualize the prompts, this fact depends on the testee’s personality.

After the observations, the researcher, however, observed some positive aspects which could actually be related to positive reactions to computer language testing. Again, it was perceived that the main trait that could actually make a distinction between the previous and the following reactions would be the test taker’s personality. Among the interesting reactions it was observed:

- Body language in one-way interaction. Some students, who were mostly considered as introverted by their teachers, evidenced a great capacity to interact with the

computer. It was even observed that around 15% did some kind of body language when addressing the speaking questions.

- Relation with competence (lower competence demands more interaction). This body language was also observed in students with lower competence who may need to rely on body language.
- High adaptability to computers. It has been observed in literature that some people are more adaptable to interact with computers than others. Some of the test takers proved to be more capable to adapt to this kind of tests than others. However, although this could be a natural thing, it is important to find the features that make some students more prone to interact with computers in language tests and those that actually do the opposite.
- Despite the “*empty responses*” students are able to synthesize and be able to articulate good monologues. The researcher observed that, all in all, most students with at least a B1 competence are able to articulate the adequate responses and even monologues.

Although so far we have addressed significant problems that may threaten students' final scores, we observed quite a positive situation among high schoolers. That may well indicate that we are not far from that transparent and normalized interface which may have little or no effect on how students perform. This may be due to the fact that students are becoming more familiar with online language tests and also because technology involves many daily interactions. Additionally, technology in language recognition may make this easier even in the future (Chiu, Liou & Yeh, 2007). Therefore, students are getting used to interacting with avatars, videos and digital prompts as well as using online applications to trigger their speaking skills (Yen, Hou & Chang, 2015). Test designers should thus develop prompts similar to the most common ones found in digital communication (Yang, Miller & Bai, 2011; Yang, Gamble & Tang, 2012; Andújar-Vaca & Cruz-Martínez, 2017).

It was also observed that some semi-communication can be established with our current ways to assess through computer delivered language tests. This is currently presented in many language lab activities. It was also considered that there is still some scarcity of online published materials that have been specifically designed for test training.

5. Conclusions

The results of this observational study have shown that even though students nowadays are more familiar with new technologies and these are indeed part of their everyday lives, when taking a test anxiety still seems to be an issue if this is done in front of a computer. As stated above, the advantages of online testing are obvious, such as the possibility to spread them all over the world and obtain results more quickly. However, if we want our students to improve their performance when using computers to take tests, we need to make sure that they are completely comfortable with it after having practiced for a long time with the format of the test. They need to be sure that they will not waste any time learning how to use the tool or reading instructions and that they can start working on the contents of the test as soon as they have it in front of them. This is why teachers need to be prepared to be able to train their students properly on the use of these tests. The demands and speed of technology of the world of education nowadays demand a critical teacher that is able to combine the teaching of language content with the digital competencies that students need to develop to successfully meet the requirements of online testing. Therefore, the crucial aspect of teachers' preparation is not just teaching students the language contents they need for the test but making them aware of the skills they need to develop to specifically address the challenges of online testing. This will result in fewer problems related to time pressure and lack of interaction and will help students realize that not having the presence of a human when they speak does not mean that what they are saying is meaningless or empty.

This research has addressed an observational study of 67 students at the University of Alcalá who took a computer-delivered exam. The observations were part of the OPENPAU research project on computer-based University Entrance Examination between 2011 and 2016. The questions that the research study intended to give an answer to were related to the difficulties that test takers had when taking an online test and how some of the problems that derive from it could be solved. Results show that the anxiety experienced by students when taking a computer-based test was linked to factors such as time pressure, lack of interaction, problems with body language, feeling unheard and lack of human presence to interact with. However, some positive aspects were also observed since many students were able to adapt to the computer-based test and successfully interact with it. The variation in reactions seems to depend on the test taker's personality. This may well be a sign of progress in web-based testing since students are becoming more used to interacting with technology. Moreover, results help teachers understand what factors they need to work on in order to facilitate students' experience when taking an online test and more online materials need to be created in order to support training in this regard.

However, we are aware that this research study is clearly limited by the sample and the circumstances in which the observations were done. Thus, further research is necessary. One of the issues that needs to be developed as contrasted to real life is how to achieve a "flow" state of mind in an online test (in fact, either traditional or online tests) (In'nami, 2006; Aydin, 2013; Bayat, Jamshidipour & Hashemi, 2017; Valencia Robles, 2017) despite the time and other issues constraints (Behnam, Jenani & Ahangari, 2014). The reduction of high negative anxiety could facilitate student's performance in most cases. This reduction of negative anxiety should be a goal in any exam to achieve the student's full potential and thus currently needs specific training (Wang & Chang, 2011). Another significant potential study would be that of personality in online language testing (Lai, 2010) which could also relate to age and socio-economic status, although the latter is gradually disappearing as a differentiating factor. All in all, this paper has addressed the researcher's observations. However, larger studies are still necessary since new issues will appear as technology evolves. In this sense, this paper may serve to trigger future studies and serve as food for thought for teachers, researchers and administrators.

6. References

- Andújar-Vaca, A., & Cruz-Martínez, M. (2017). Mobile instant messaging: Whatsapp and its potential to develop oral skills. *Comunicar: Media Education Research Journal*, 25(50), 43-52. Retrieved from <https://search.proquest.com/docview/2013524090?accountid=14609>
- Aydin, S. (2013). Factors affecting the level of test anxiety among EFL learners at elementary schools. *E-International Journal of Educational Research*, 4(1), 63-81. Retrieved from <https://search.proquest.com/docview/1347458261?accountid=14609>
- Bayat, A., Jamshidipour, A., & Hashemi, M. (2017). The beneficial impacts of applying formative assessment on iranian university students' anxiety reduction and listening efficacy. *International Journal of Languages' Education and Teaching*, 5(2), 1-11. Retrieved from <https://search.proquest.com/docview/1941339629?accountid=14609>
- Behnam, B., Jenani, S., & Ahangari, S. (2014). The effect of time-management training on test-anxiety and self-efficacy of iranian intermediate EFL learners. *Iranian Journal of Language Teaching Research*, 2(1), 45-61. Retrieved from <https://search.proquest.com/docview/1895983152?accountid=14609>
- Bryman, A. (1988). *Doing research in organizations*. Oxford: Taylor & Francis.
- Chapelle, C. A., & Voss, E. (2016). 20 years of technology and language assessment in Language Learning & Technology. *Language Learning & Technology*, 20(2), 116–128.pç
- Chen, N., & Wang, Y. (2008). Testing principles of language learning in a cyber face-to-face environment. *Educational Technology & Society*, 11(3), 97-113. Retrieved from <https://search.proquest.com/docview/61942649?accountid=14609>

- Chiu, T., Liou, H., & Yeh, Y. (2007). A study of web-based oral activities enhanced by automatic speech recognition for EFL college learning. *Computer Assisted Language Learning*, 20(3), 209-233. Retrieved from <https://search.proquest.com/docview/62068722?accountid=14609>
- Coniam, D. (2006). Evaluating computer-based and paper-based versions of an english-language listening test. *ReCALL*, 18(2), 193-211. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/61866638?accountid=14609>
- Coniam, D. (2009). Experimenting with a computer essay-scoring program based on ESL student writing scripts. *ReCALL*, 21(2), 259-279. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/61880506?accountid=14609>
- David, V. (2016). A comparison of two approaches for assessing L2 writing: Process-Based and impromptu timed writing exams. *Applied Language Learning*, 26(1), 65-82. Retrieved from <https://search.proquest.com/docview/1773217472?accountid=14609>
- Dooley, P. (2008). Language testing and technology: Problems of transition to a new era. *ReCALL*, 20(1), 21-34. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/61946517?accountid=14609>
- Fox, J., & Cheng, L. (2015). Walk a mile in my shoes: Stakeholder accounts of testing experience with a computer-administered test. *TESL Canada Journal*, 32(9), 65-86. Retrieved from <https://search.proquest.com/docview/1826524519?accountid=14609>
- García Laborda, J. (2007). On the net: Introducing standardized EFL/ ESL exams. *Language Learning & Technology*, 11(2), 3-9.
- García Laborda, J., Amengual Pizarro, M., Litzler, M.F., García Esteban, S. & Otero de Juan, N. (2017). *Student perceptions of the CEFR levels and the impact of guided practice on Aptis Oral test performance*. Cambridge: British Council.
- García Laborda, J., & Magal Royo, T. M. (2009). Training senior teachers in compulsory computer based language tests. *Procedia: Social and Behavioral Sciences*, 1(1), 141-144.
- García Laborda, J., Magal Royo, MT & Bakieva, M. (2016). Looking towards the Future of Language Assessment: Usability of Tablet PCs in Language Testing. *Journal of Universal Computer Science*, 22(1), 114-123.
- García Laborda, J., Magal Royo, T. & Enríquez Carrasco, E.V. (2010). Teachers' trialing procedures for Computer Assisted Language Testing Implementation. *Eurasian Journal of Educational Research*. 39, 161-174.
- García Laborda, J., Magal Royo, T., Litzler, M.F. & Giménez López, J.L. (2014). Mobile phones for a University Entrance Examination language test in Spain. *Educational Technology & Society*, 17(2), 17-30.
- Gebril, A., & Eid, M. (2017). Test preparation beliefs and practices in a high-stakes context: A teacher's perspective. *Language Assessment Quarterly*, 14(4), 360-379.
- He, L., & Min, S. (2017). Development and validation of a computer adaptive EFL test. *Language Assessment Quarterly*, 14(2), 160-176. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/1913353776?accountid=14609>
- In'nami, Y. (2006). The effects of test anxiety on listening test performance. *System: An International Journal of Educational Technology and Applied Linguistics*, 34(3), 317-340. Retrieved from <https://search.proquest.com/docview/61928846?accountid=14609>
- Khoshsima, H., Hosseini, M., & Toroujeni, S. M. H. (2017). Cross-mode comparability of computer-based testing (CBT) versus paper-pencil based testing (PPT): An investigation of testing administration mode among iranian intermediate EFL learners. *English Language Teaching*, 10(2), 23-32. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/1895981640?accountid=14609>
- Labi, A. (2006). European educators predict chaos if ETS expands internet-based english test to 100 countries. *Chronicle of Higher Education*, 52(22), 2. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/61803385?accountid=14609>
- Lai, Y. (2010). Which do students prefer to evaluate their essays: Peers or computer program. *British Journal of Educational Technology*, 41(3), 432-454. Retrieved from <https://search.proquest.com/docview/742869291?accountid=14609>
- Liu, M., & Kleinsasser, R. C. (2015). Exploring EFL teachers' CALL knowledge and competencies: In-service program perspectives. *Language Learning & Technology*,

- 19(1), 119-138. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/1697493382?accountid=14609>
- Liu, X., Liu, H., Bao, Z., Ju, B., & Wang, Z. (2010). A web-based self-testing system with some features of web 2.0: Design and primary implementation. *Computers & Education*, 55(1), 265-275. Retrieved from <https://search.proquest.com/docview/742866834?accountid=14609>
- Mei, B., Brown, G. T., & Teo, T. (2018). Toward an understanding of preservice english as a foreign language teachers' acceptance of computer-assisted language learning 2.0 in the People's Republic of China. *Journal of Educational Computing Research*, 56(1), 74-104. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/2013521916?accountid=14609>
- Messick, S. (1996). Validity and washback in language testing. *Language Testing*, 13(3), 241-256.
- Namdar, S., & Bagheri, M. S. (2012). The effect of instructing impression management behaviors on maximizing applicants' performance in the IELTS speaking test. *English Language Teaching*, 5(4), 150-160. Retrieved from <https://search.proquest.com/docview/1773223947?accountid=14609>
- Ockey, G. J. (2009). Developments and challenges in the use of computer-based testing for assessing second language ability. *Modern Language Journal*, 93, 12. Retrieved from <https://search.proquest.com/docview/61819498?accountid=14609>
- Odo, D. M. (2012). Computer familiarity and test performance on a computer-based cloze ESL reading assessment. *Teaching English with Technology*, 12(3), 18-35. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/1941340773?accountid=14609>
- Popham, W. J. (2001). Teaching to the test? *Educational Leadership*, 58(6), 16-21.
- Qian, D. D. (2009). Comparing direct and semi-direct modes for speaking assessment: Affective effects on test takers. *Language Assessment Quarterly*, 6(2), 113-125. Retrieved from <https://search.proquest.com/docview/61813075?accountid=14609>
- Roever, C. (2006). Validation of a web-based test of ESL pragmalinguistics. *Language Testing*, 23(2), 229-256. Retrieved from <https://search.proquest.com/docview/62005537?accountid=14609>
- Schneberger, S., Amoroso, D.L. & Durfee, A. (2007). Factors that influence the performance of computer-based assessments: an extension of the technology acceptance model. *Journal of Computer Information Systems*, 48 (2), 74-90.
- Tahmasebi, S., & Rahimi, A. (2013). Computer-assisted assessment: Highlights and challenges. *Teaching English with Technology*, 13(2), 55-74.
- Valencia Robles, J., de F. (2017). Anxiety in language testing: The APTIS case. *PROFILE: Issues in Teachers' Professional Development*, 19, 12. Retrieved from <https://search.proquest.com/docview/2011270812?accountid=14609>
- Wang, L., & Chang, H. (2011). Improve oral training: The method of innovation assessment on english speaking performance. *International Journal of Distance Education Technologies*, 9(3), 56-72. Retrieved from <https://search.proquest.com/docview/964179571?accountid=14609>
- Yang, Q., Miller, M., & Bai, K. (2011). Testing the improvement of english as a foreign language instruction among chinese college students through computerized graphic visuals. *TESOL Quarterly: A Journal for Teachers of English to Speakers of Other Languages and of Standard English as a Second Dialect*, 45(1), 170-182. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/881457615?accountid=14609>
- Yang, Y. C., Gamble, J., & Tang, S. S. (2012). Voice over instant messaging as a tool for enhancing the oral proficiency and motivation of English-as-a-foreign-language learners. *British Journal of Educational Technology*, 43(3), 448-464. Retrieved from <https://search.proquest.com/docview/1018481249?accountid=14609>
- Yanxia, Y. (2017). Test anxiety analysis of Chinese college students in computer-based spoken English test. *Educational Technology & Society*, 20(2), 63-73. Retrieved from <https://search.proquest.com/docview/1913345293?accountid=14609>
- Yen, Y., Hou, H., & Chang, K. E. (2015). Applying role-playing strategy to enhance learners' writing and speaking skills in EFL courses using facebook and skype as learning tools: A case study in taiwan. *Computer Assisted Language Learning*, 28(5), 383-406. Retrieved

from <https://search-proquest-com.ezproxy.uned.es/docview/1773216934?accountid=14609>

- Yu, G., & Zhang, J. (2017). Computer-based english language testing in china: Present and future. *Language Assessment Quarterly*, 14(2), 177-188. Retrieved from <https://search-proquest-com.ezproxy.uned.es/docview/1913352985?accountid=14609>
- Zhan, Y., & Wan, Z. H. (2016). Test takers' beliefs and experiences of a high-stakes computer-based english listening and speaking test. *RELC Journal: A Journal of Language Teaching and Research*, 47(3), 363-376.