

Alternative Computer Assisted Communicative Task-based Language Testing: New Communicational and Interactive Online Skills

<https://doi.org/10.3991/ijet.v16i19.26035>

Teresa Magal-Royo¹(✉), Jesus Garcia Laborda², Marçal Mora Cantallops²,
Salvador Sánchez Alonso²

¹ Universitat Politècnica de Valencia, Valencia, Spain

² Universidad de Alcalá, Madrid, Spain
tmagal@degi.upv.es

Abstract—Computer-assisted language learning knowledge tests should no longer be designed on traditional skills to measure individual competence through traditional skills such as reading, comprehension and writing, but instead, it should diagnose interactive and communication skills in foreign languages. In recent years in online education, it has been necessary to review the concept of interactive competence in digital environments in a complementary way to its traditional use. It is important to promote a new typology of alternative tasks and items in tests where examinees can prove a real interactive performance in communication and interaction through the digital scenario. This should be done through tools that facilitate oral negotiation, the management and understanding of the information extracted from online repositories, the search for suitable online digital material, and the use of new modes of audio-visual communication. Although some of these tasks have been used in a complementary way in the design of language tests previously: it is true that they have not been applied in a coherent way to be used as an assessment tool. A first approach was made by Miguel Álvarez, García Laborda & Magal-Royo (2021) in the development of oral negotiation skills through the use of interactive tools. The current online assessment models analyzed by García Laborda & Álvarez Fernández (2021) indicate the need to seek new ways of assessing foreign languages through the design of tests that fit in the current digital and interactive world.

Keywords—Computer-assisted language learning, testing, language testing tasks, online assessment models, interactive online skills

1 Introduction

Language assessment has an increasing significance in today's world. From the educational perspective, it is necessary to position and diagnose the learning of a second language in order to foresee the potential of students as future workers in the world and also observe the health of the national educational systems. That is the main reason why the main test suite organized by The Organisation for Economic Co-operation and

Development, OECD's Programme for International Student Assessment, the PISA tri-annual report will measure foreign languages in 2025 [1]. However, significant studies have claimed for many years the fact that the current model of language testing based on Weir's [2] framework looks static and old fashioned due to the inclusion of tasks such as those found in objective tests (matching, multiple choice, giving titles to paragraphs, etc...) [2]. However, currently traditional skills that measure individual competences such as reading and writing comprehension and expression are insufficient to assess the true competence of a language user based on the form of online learning that has been received, as opposed to the traditional centrality of potential competence. This type of items have been in the field of language testing since the 1960s. Recent trends in language testing have claimed the little signification of objective tests, additionally; some researchers have claimed innovations such as the use of avatars for language assessments. The claims of most of these competence-centered test models is that these measurements "prove", if tests actually prove anything, the personal competence. The problem is that communication is based on both competence and performance but just too often a flaw on the performance part is way worse than the counterpart. While the latter may lead to an incomplete message, the former usually means breakouts in communication. Therefore, it is necessary to seek new tasks that can provide evidence of performance through communicative features.

2 Conceptual framework

In a recent paper, Fernández Álvarez, García Laborda & Magal-Royo [3], state that there are significant problems in regards of face and content validity that require new types of tasks. This short paper addresses the technical tools to face the challenge of obtaining a more robust platform to implement those tests. The same authors propose the following diagram to conceptualize the principles that should guide the implementation of the project (figure 1).

This framework is based on three on the definition of the language that is going to be assessed, 1) Interaction, 2) Language context, 3) Assessment strategies. The very same language definition and description is going to move towards the implementation and use of the tools to record and verify the testee's performance. The role of technology is to facilitate the tools that can serve to do so. Thus, the design must look at the technical specifications of the traditional test than can be found. The most significant issues can be observed in table 2 where the processes related to the communication channel are displayed while showing the significant role of according to the type of channel or data input (view, speak, listen, touch, peer communication, etc ...): as well as the importance of interfaces and the type of device through which the test is delivered.

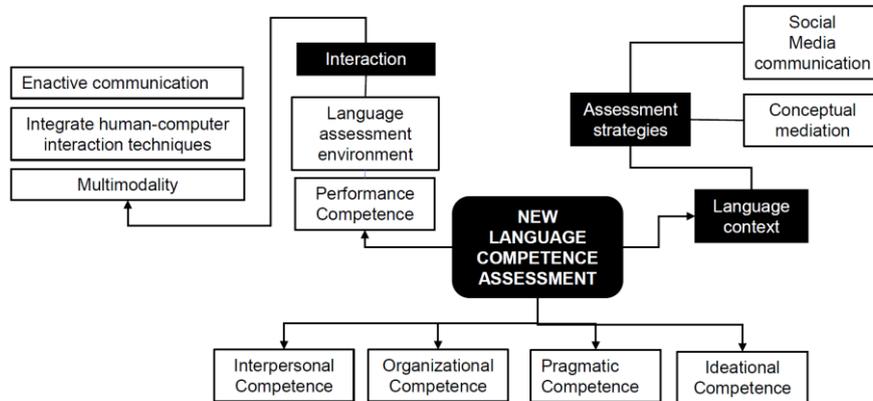


Fig. 1. Conceptual framework of an interactive language test (based on Fernández Álvarez, García Laborda & Magal Royo (2021, in press))

What is most important is to ensure that the IT tools serve to guarantee that the test items really reflect the real life tasks, especially in terms of usability [25], interactivity [26], accessibility [27], user experience [28], acceptance [29] and multimedia [30], than can be assessed through the ad-hoc designed rubrics. The model presented above (figure 1) requires the use of online methodologies to access to part of the information learned and received online in the different test items, which includes digital content adapted for language testing [4]. This implies the need for the user to know, manage and use digital communication environments as part of communication and professional skills which are likely to be found a professional future scenarios.

The use of tools such as oral negotiation [5], the management and understanding of the information extracted from online repositories, the search for suitable online digital material, and the use of new audiovisual communication modes are integrated elements in new types of language testing items. This paper will analyze the importance of using interactive communication in education and language testing. Although some of these tasks have been used in a complementary way in the design of evaluation tests, the truth is that they have not been applied in a coherent systematic way to evaluate language test candidates. The next section discusses the importance of looking for new ways of assessing foreign languages by designing tests in line with today's digital and interactive world.

Features of a traditional task design for testing				
Channel/data entry	Devices	Interface	User's sets	General purpose for testing
View 	Screen 	Screen access to a viewing configuration	Position of screen or tablet/configure the brightness/contrast	Visual access to the information about the english reading, writing, listening, oral assessment /Instructions/ Do task/test/act
Listen 	Earphones 	Screen access to a listening configuration	Position of the headphones/ configure the sound volume	Listening access the information about the english english listening, oral assessment /Instructions/ Do task/test/act
Speak 	Microphone 	Position of the headphones/ configure the sound volume	Position of the microphone/ configure volume	Emit words to access the information about the english listening, oral assessment /Instructions/ Do task/test/act
Touch 	Screen/Tablet 	Screen access to touch configuration on the screen	Position of screen or tablet/configure the brightness and/ or contrast	Select buttons or links to access the information about the english reading, writing, listening, oral assessment/Instructions/ Do task/test/act
Keyboard 	Physical/virtual keyboard 	Keyboard configuration	Position of screen or tablet/keyboard	Select buttons or links to access the information about the english reading, writing, listening, oral assessment/Writing words/ sentences/grammar to do task/test/ act
Mouse 	Physical/integrated mouse/pencil 	Mouse configuration	Position of screen or tablet/keyboard	Select buttons or links to access the information about the english reading, writing, listening, oral assessment/Instructions/ Do task/test/act
Peer communication 	Physical/integrated webcam 	Webcam configuration	Position of the webCam to recorder	Create a audiovisual record information about the english listening, oral assessment / Instructions/ Record a audiovisual of task/test/ act

Fig. 2. Features of a traditional task design that must be addressed through online tools

3 Interactive skills for assessment in virtual environments of foreign language learning.

Online language learning environments such as virtual classrooms are used by students in a self-directed way frequently. Self-learning is at present reducing the digital gap worldwide [6]. Currently students handle interactive tools in a frequently both in social life and in their training [7]. Some studies raise year after year the impact of new

technologies in online training, including language learning, which determine that students have adapted quickly to the changes and processes of digital communication in the classroom, both in person as virtual [8], [9]. It is on effective interactive communication that language learning should focus and should therefore be included in current assessment methods.

Following the criteria of the report created in 2020, the Common European Framework of Reference for Languages, CEFR [10], which analyzes the competencies that influence interactive communication and the management of student information when they learn a language, it is necessary to rethink how to design new ways of evaluating students according to today's communication and professional needs. This is especially convenient to cover levels A-1 to C1 in the official languages of the European Union in general based on criteria as significant as interaction, mediation and interactive communication with the new existing digital media.

These three aspects require technical knowledge of the interactive medium that allows adjusting the technological needs of each person to the types of new assessment tasks of language competencies. In fact, the great diversity of communication and interaction channels has made it possible to define the need to create tasks from multimodality, understood as the use of communication channels in a synchronized way as occurs in the real world [11], [12]. Interaction allows us relate and learn from the environment synchronically according to what our senses capture at the same time [13]. Mediation helps us adapt to the environment and language depending on our needs to transmit, convince or defend a position in a conversation [14], [15] and finally communication in the digital media brings us closer to the real world communication and helps the language learner develop real critical thinking [16]. All of this must serve to define new ways of assessing foreign languages by designing tests in line with today's digital and interactive world [17].

4 New paradigms in computer assisted languages testing tasks

According to the needs to develop a more interactive assessments, the combination of language use and multimedia use in a real world must lead to the design and increase of the presence and use of interactive learning environments that are currently being used in communication and interaction skills will shape the design of new forms of tasks for language tests. [18]. Additionally, the new types of assessment tasks and items should consider not only virtual forms of exam delivery (traditionally on desktops) but also new ubiquitous devices [19]. In order to achieve more communicative test-items forms the following proposal of items are described in table 1.

Table 1. Description of interactive task for computer assisted language learning

Skill assessment	Task description
Reading	Use online digital libraries/repositories for summarizing and analyzing reading information. Use and consulting online dictionaries for comprehension. Use social network media texts post, news, tweets, etc ... for summarize and interpret.
Writing	Describe and understand digital static images (from digital photographic libraries / repositories). Describe and understand digital audiovisuals (from digital audiovisual films from libraries / repositories). Do audiovisual presentations that include interactive digital documents. Create scientific articles that include links and digital references in text. Create opinion articles that include links and digital references in text.
Speaking	Peer communication speaking to current news. Peer communication for negotiation with a goal. Peer communication for presentation of results.
Listening	Listen and understand digital audio files. (speech, conversation, voice-over, etc..) Listen and understand digital Audio Broadcasting, Radio/TV news Listen and understand digital audio files. Life music. Listen and understand environmental, especial and/or sensorial sound. Binaural sound, Holophonic sound, HRTF sound. Listen and understand Sound clips/effects. Listen and understand digital audio files from a website. Podcast.

5 Conclusions

This paper presented succinctly the tools and features to design multimodal test items that reflect the language use more realistically, specifically in terms of use of digital media and also in cooperative scenarios where two or more test takers can interact. The design of these types of tasks should also encourage the creation of quality repositories in new digital file formats that can serve for adaptive language tests through the combination of task libraries that can be obtained through a continuous process to test creation especially for foreign language test creation and administration companies such as Cambridge Assessments, the Educational Testing Service or even national agencies. Obviously, the main limitation of this paper is that this a work in progress that will need further research in terms of design and trialing both technological and linguistic. In this sense, a significant amount of work is to be faced soon but the outcomes make worth the efforts.

6 References

- [1] Organisation for Economic Co-operation and Development, OCDE (2018). PISA 2025 PISA 2025 Foreign Language Assessment Framework. OECD Publishing, Paris. <https://www.oecd.org/pisa/foreign-language/PISA-2025-FLA-Framework.pdf> (Consulted 20/07/2021)

- [2] Weir, C. J. (2005), *Language Testing and Validation: An Evidence- Based Approach*, Research and Practice in Applied Linguistics book series (RPAL), Palgrave Macmillan, Hampshire.
- [3] García Laborda, J., & Fernández Álvarez, M. Magal-Royo (2021). Underrepresentation of the construct in standardized foreign language exams in the Spanish educational system in computer-assisted language exams. *Porta Linguarum. Revista internacional de didáctica de las lenguas extranjeras*. (In Press). <https://doi.org/10.30827/digibug.54093>
- [4] Magal-Royo T. Garcia Laborda J. (2017). Interactivity in foreign language testing. *Multimodal Interaction with W3C Standards*, Routledge: 351-365. https://doi.org/10.1007/978-3-319-42816-1_16
- [5] García Laborda, J., & Fernández Álvarez, M. (2021). Multilevel Language tests: Walking into the land of the unexplored. *Language Learning & Technology*, 25(2): 1–25. <http://hdl.handle.net/10125/73428>
- [6] Allwright R.L. (1984). The importance of interaction in classroom language learning. *Applied linguistics*, 5(2): 156-71 <https://doi.org/10.1093/applin/5.2.156>
- [7] Vez J. M. (2009). Multilingual Education in Europe: Policy Developments. *Porta Linguarum: Revista internacional de didáctica de las lenguas extranjeras*, 12: 7-24 http://www.ugr.es/~portalin/articulos/PL_numero12/IJM%20Vez.pdf
- [8] Constanzo, E (2009). Towards the development of a global communicative competence: the integration of oral and written skills in teaching and learning a foreign language. *Porta Linguarum. Revista internacional de didáctica de las lenguas extranjeras*, 12: 107-116. <https://doi.org/10.30827/digibug.31874>
- [9] Chen L, Dustin Freeman D., Balakrishnan R. (2019). Integrating Multimedia Tools to Enrich Interactions in Live Streaming for Language Learning CHI '19, Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, May 2019, 438: 1-14 <https://doi.org/10.1145/3290605.3300668>
- [10] Council of Europe (2020), *Common European Framework of Reference for Languages, CEFR: Learning, teaching, assessment - Companion volume*, Council of Europe, Strasbourg. <https://www.coe.int/en/web/education/-/common-european-framework-of-reference-for-languages-learning-teaching-assessment-companion-volume> (Consulted 20/07/2021)
- [11] Oviatt S. and Larson J.A. (2003). *Principles for Multimodal User Interface Design*. Workshop. CHI 2003: New Horizons. Florida, USA.1058-1059.
- [12] Oviatt S., Schuller B., Cohen P.R., Sonntag D., Potamianos G., and Krüger A. (Eds.). (2017). *The Handbook of Multimodal-Multisensor Interfaces: Foundations, User Modeling, and Common Modality Combinations - Volume 1*. ACM Books, Vol. 14. Association for Computing Machinery and Morgan & Claypool. <https://doi.org/10.1145/3015783>
- [13] Oviatt. S. (2013). *The Design of Future Educational Interfaces*. Routledge Press, New York. <https://doi.org/10.4324/9780203366202>
- [14] Dendrinos, B. (2006). Mediation in communication, language teaching and testing. *Journal of Applied Linguistics* 22: 9-35.
- [15] Dendrinos, B. & Stathopoulou, M. (2010). Mediation activities: Cross-Language Communication Performance. *ELT News*, 249 (12) http://rce1.enl.uoa.gr/kpg/kpgcorner_may2010.htm
- [16] Oweis, T. (2013). A literature review on communication strategies in language learning. *European Scientific Journal*, ESJ, 9 (26).
- [17] Magal-Royo T. and Giménez López J.L. (2012). Multimodal Interactivity in the Foreign Language Section of the Spanish University Admission Examination. *Revista de Educacion*. 357: 163-176.

- [18] Organisation for Economic Co-operation and Development, OCDE (2018). Manual for Language Test Development and Examining for use with the CEFR <https://rm.coe.int/Co-ERMPublicCommonSearchServices/DisplayDCTMContent?documentId=0900001680667a2b> (Consulted 23/07/2021)
- [19] Kukulska-Hulme A., Arús-Hita J., García Laborda J. (2021). Mobile, Open and Social Language, Learning Designs and Architectures. *Journal of Universal Computer Science*, 27(5): 413-424. <https://doi.org/10.3897/jucs.68852>
- [20] Alonso Gaona-García P.; Ana Feroso García A.; Sánchez Alonso S. (2017). Exploring the Relevance of European Digital Resources: Preliminary Ideas on European Metadata Quality *Revista Interamericana de Bibliotecología*, 40-1: 59-69. <https://doi.org/10.17533/udea.rib.v40n1a06>
- [21] Mora Cantallops, Marçal, Sánchez Alonso, Salvador, (2019). Changing the Subject: Dynamic Discussion Monitoring in Twitter. *Congreso Internacional. 13th International Conference on Metadata and Semantics Research, Roma*. https://doi.org/10.1007/978-3-030-36599-8_14
- [22] Alonso Gaona-García P.; Sánchez Alonso S.; Feroso García A. (2017). Visual analytics of European digital library for reuse in learning environments: A premier systematic study *Online Information Review*. Emerald Group Publishing, 41-6: 840-859. <https://doi.org/10.1108/oir-04-2016-0114>
- [23] Dylan Sung D. (2011). Enhancing English learning website content and user interface functions using integrated quality assessment. *Proceedings of the 2011 international conference on Virtual and mixed reality: systems and applications -2*: 90-99. https://doi.org/10.1007/978-3-642-22024-1_11
- [24] Magal-Royo T., Garcia Laborda J., Price S. (2017). A New m-Learning Scenario for a Listening Comprehension Assessment Test in Second Language Acquisition [SLA]. *JUCS- Journal of Universal Computer Science* 23 (12): 1200-1214.
- [25] Azlina, N., Ahmad, N, Hussaini, M. (2021). A Usability Testing of a Higher Education Mobile Application Among Postgraduate and Undergraduate Students. *International Journal of Interactive Mobile Technologies (iJIM)*, 15(9): 88-102. <https://doi.org/10.3991/ijim.v15i09.19943>
- [26] Razaque, A., Elleithy, K. (2012). Interactive Prototypes to Foster Pedagogical Activities for Mobile Collaborative Learning Environment (MCLE). *International Journal of Interactive Mobile Technologies (iJIM)*, 6(1): 16-24. <https://doi.org/10.3991/ijim.v6i1.1808>
- [27] Kongsoontornkijkul, K., Pichyangkura, R., Vadhanasindhu, P., Vanichbuncha, K. (2019). Developing A Mobile Web for Innovative University Assessment System: Thailand Talent Mobility Programme. *International Journal of Interactive Mobile Technologies (iJIM)*, 13(11): 34-50. <https://doi.org/10.3991/ijim.v13i11.10924>
- [28] Hussain, A., Mkpojiogu, E.O.C., Ishak, N., Mokhtar, N. (2019). A Study on the Perceived Mobile Experience of Myeg Users. *International Journal of Interactive Mobile Technologies (iJIM)*, 13(11): 4-23. <https://doi.org/10.3991/ijim.v13i11.11306>
- [29] Pastırmacıoğlu, B., Caliskan, S., Ozcan, D., Uzunboylu, H. (2018). Determining a Mobile Internet Acceptance Model of Special Education Teacher Candidates. *International Journal of Interactive Mobile Technologies (iJIM)*, 12(4): 32-42. <https://doi.org/10.3991/ijim.v12i4.9198>
- [30] Ozdamli, F., Ercag, (2018). Opinions of Teacher Candidates on the Usage of Mobile Applications in the Multimedia Development Processes. *International Journal of Interactive Mobile Technologies (iJIM)*, 12(2): 27-38. <https://doi.org/10.3991/ijim.v12i2.7679>

7 Authors

Teresa Magal-Royo PhD in Fine Arts, Associate Professor at the Graphic Engineering Department. Degree: Product Design Universitat Politècnica de Valencia, Spain. Post graduate in the Royal College of Art, London, England. Developing and coordinating projects related to the use of new technology in the field of education/Design and development of user-oriented interfaces/ Adaptation of graphic interfaces for viewing on mobile devices/ usability and accessibility in digital communication devices and in product design for business. /Multimodal interfaces user oriented for ubiquitous devices. She has participated in several national and international research projects on the use of technology in education. ORCID <https://orcid.org/0000-0002-7640-6264>.

Jesus Garcia Laborda PhD. Assistant Professor and Dean of the College of Education, Universidad de Alcalá, Spain. Doctor in English Philology (2000) and Doctor of Didactics of Language and Literature (2010). Research fields, Didactics of language and literature; Languages for specific purposes; Evaluation; English as Foreign Language, ELF, Computer Assisted Language Learning, CALL. ORCID <https://orcid.org/0000-0003-0125-4611> (email: jesus.garcialaborda@uah.es)

Marçal Mora Cantalops is an Industrial and Computer Engineer who graduated from UPC (Universitat Politècnica de Catalunya) in 2009. He gained a Ph.D. in Communication, Information, and Technology in the Web Society from the University of Alcalá, Spain (2018). Marçal also holds a Master in Data Science. Since 2018, Marçal has been a professor of the Computer Science Department at the University of Alcalá, in Spain. Currently an assistant professor, Marçal is also a member of the Information Engineering Research Unit. His areas of research include the fields of social network analysis, data science, and game studies (particularly e-sports and MOBA games), having authored multiple JCR publications in these fields in the last two years. ORCID <https://orcid.org/0000-0001-9863-7111> (email: marcal.mora@uah.es).

Salvador Sánchez Alonso, senior member of the Information Engineering group, a research unit dependent of the Computer Science Department of the University of Alcalá, Spain. He previously worked as an assistant professor at the Pontifical University of Salamanca, and also as a software engineer at a software solutions company in the UK. He earned a Ph.D. in Computer Science at the Polytechnic University of Madrid in 2005 with a research on learning object metadata design for better machine “understandability”, and finished a degree on Library Science on 2011. He has participated or coordinated in a good number of EU-funded projects in the last 5 years on the topics of learning object repositories, metadata and semantic technologies remarkably LUISA, Organic.Edunet, VOA3R, Organic.Lingua, Open Discovery Space and agInfra just to name a few. Author of more than 30 high impact factor publications in the last 10 years, his current research interests include Technology enhanced Learning, Learning, Semantic Web, Web science and Computer science education. ORCID: <https://orcid.org/0000-0002-9949-4797> (email: salvador.sanchez@uah.es).

Article submitted 2021-08-06. Resubmitted 2021-09-10. Final acceptance 2021-09-11. Final version published as submitted by the authors.