

Exploring the effectiveness of multimodal language pedagogy during the COVID-19 time

Zhonggen Yu (✉ 401373742@qq.com)

Beijing Language and Culture University <https://orcid.org/0000-0002-3873-980X>

Research Article

Keywords: Multimodal language pedagogy, Rain Classroom, WeChat, MOOCs

Posted Date: May 25th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-551047/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

This special pandemic time has forced billions of learners to receive multimodal language pedagogy. By combining Rain Classroom, WeChat, Massive Open Online Courses (MOOCs), with the traditional face-to-face classroom, this study implements a research on the effectiveness of multimodal language pedagogy among English majors (N = 59). It is concluded that the multimodal language pedagogy may improve language learning outcomes compared with the traditional one although there are still many disputes over this approach. The essence of the multimodal language pedagogy may be how to appropriately design rather than what digital tools are involved. Future research may focus on how to design effective multimodal language pedagogy by reducing the distractions and increase the interactions.

Introduction

The new century has been witnessing an increasing attention to multimodal language learning especially during this pandemic time. The rapid development of information technologies brings a great number of pedagogical tools, e.g. visual and aural tools, to language pedagogy, which forms a rising multimodal language pedagogical approach and poses challenges to traditional language teaching methods. The traditional blackboard-chalk teaching may be confronted with the innovation integrated with multiple teaching media. Resistance to change or keeping pace with the innovation may now be a realistic challenge to language educators and learners. It is thus necessary to explore a new multimodal pedagogy combining Massive Open Online Courses (MOOCs), Rain Classroom, WeChat, with the traditional face-to-face classroom.

In the multimodal pedagogy, students are required to learn via an approach combining MOOCs, Rain Classroom, WeChat, with the traditional face-to-face classroom. Specifically, before and after class, they have easy and convenient access to MOOCs, while in class they receive the Rain Classroom assisted teaching based on the WeChat platform and the traditional multimedia projecting face-to-face pedagogy. We firstly made dozens of videos about general linguistics and uploaded them to China University MOOCs Platform (<https://www.icourse163.org>), to which students have free and easy access. The MOOCs contents include invitations to linguistics, speech sounds, morphology, syntax, semantics, language, culture and society, pragmatics, language and literature, and theories and schools of modern linguistics. The MOOCs platform also provides the overview of the course, the teaching goals, scoring rubrics, teaching outlines, and references. It also includes exercises and tests for students to complete, together with a discussion forum, where students can interact with peers and teachers. They can also post questions and opinions for discussion.

Rain Classroom, developed by Tsinghua University, is an intelligent teaching application integrated with WeChat, a popular social medium widely used in China. It can be freely downloaded from the Internet (<https://www.yuketang.cn/>). Students log in Rain Classroom by scanning the QR code or directly entering the code on the WeChat platform. Teachers may implement a roll call, live record the lecturing, allot assignments, conduct quizzes or tests, and synchronously or asynchronously review students'

performances. In class, students may also post comments on the forum and show that they fail to understand some contents by clicking the corresponding slides. Teachers may then decide or adjust their teaching progress based on students' visualized performances in the form of histograms. When the class is over, the teacher can review students' scenario in detail such as attendance, response, completion rate of assignment, posts, and question answer.

Although numerous studies have been devoted to multimodal language education, little is known about the multimodal pedagogy combining MOOCs, Rain Classroom, WeChat, with the traditional face-to-face classroom. This study, aiming to study the effect of a multimodal pedagogy combining MOOCs, Rain Classroom, WeChat, with the traditional face-to-face classroom, is necessary and meaningful especially during this pandemic time.

Literature Review

Conceptualizing multimodality

The term "multimodality" starts with the concept that language acts as one of a multitude of learning resources where sentence or contextual meaning is produced or uttered, transferred, received, and understood (Jewitt, 2008). The essence of multimodality is that language communication is a multimodal procedure where each communicative activity involves synchronous adoption of multimodal modes producing meanings that may be mutually compatible and consistent, or mutually paradoxical and exclusive (Kress, 2010). The mode is defined as the systematically organized structure for learners or teachers to understand the produced meanings, which includes various elements such as sound, picture, gesture, music, gaze, movement, and neural response (Jewitt & Kress, 2003). Therefore, language educators and learners will possibly fail to communicate through languages if they ignore the importance of multimodal language pedagogy.

The multimodal language pedagogical approach refers to the multimodal language learning and teaching methods involving the use of digital technologies that help learn or teach a language via texts, images, audios, videos, and multimedia (Lotherington & Jenson, 2011). In this study, the multimodal language pedagogy combines MOOCs, Rain Classroom, WeChat, with traditional multimedia projecting system assisted teaching approach. This multimodal approach has become popular in China especially during the pandemic time.

Positive educational outcomes

Numerous studies reported that multimodal language pedagogy could contribute to positive learning outcomes. Multimodal pedagogy could improve students' learning outcomes of content knowledge and teachers' professional development by motivating and engaging learners, deepening their understandings of knowledge, and improving their digital learning (Li, 2020). Multimodal learning with tablets could improve emergent literacy of young children which could provide fundamental skills for their future learning (Yelland, 2018). The Responsive Multimodal Oral Presentation Pedagogy could improve

students' conceptual knowledge, stimulate their interest, and enhance their oral language skills (Seau & Azman, 2020).

The multimodal language pedagogy could improve learners' knowledge acquisition and language writing skills. The multimodal pedagogy could improve students' writing by enhancing their consultation, providing learning resources, and making meanings (Archer, 2017). Students tend to be more skilful in the use of information technologies, digital tools, and mobile devices. It is thus necessary for teachers to adopt a multimodal pedagogy to guide students. They can also command some skills to conduct analysis or critical comments on texts to innovate their teaching styles (Ryan, Scott, & Walsh, 2010). In the multimodal learning of primary students, reviewing the learning contents may be able to sharpen the insight into knowledge obtained, which challenges the traditional way to improve reading and writing skills (Berger & Zezulkova, 2018).

Multimodal language pedagogy was conducive to learners' psychological variables such as encouragement, enjoyment, humor, and analytical skills. The multimodal approach could encourage students to create meanings and enhance critical thinking abilities via picture books (Reyes-Torres & Raga, 2020). Humor in an online multimodal language learning context is conducive to learners' conceptualization of psycholinguistics (Song, Williams, Schallert, & Pruitt, 2021). Adult learners can accept and enjoy the multimodal language learning, which still needs broader research and further reformation in the future (Burgess & Rowsell, 2020). The multimodal pedagogy could help students analyze lecturer's language choices and their rationales through multiple ways so as to solve various problems (Le Roux, & Kloot, 2019). The multimodal pedagogy integrated with images and artworks could improve students' critical thinking abilities and improve their perception of global citizenship (Kang, Mehranian, & Hyatt, 2017).

The multimodal language pedagogy could improve students' needs and enhance their language meaning linkages. The multimodal pedagogy could meet various needs of multicultural students and enhance the awareness of technology use in the internationalized multilingual learner community (Walsh, Durrant, & Simpson, 2015). Through a multimodal pedagogy involving cartoons, various texts, pictures, video clips, and learning activities, high school students can actively work out the vocabulary meanings and show their identities and enthusiasm in the engagement in meaning figuring. This multimodal approach links meaning-figuring with in-class practices, social interactions, and various learning contexts (Ajayi, 2008).

Challenges

Multimodal language pedagogy also brings about numerous challenges such as technology skills, self-regulation, and schedule management. Learners with poor technical skills, weaker self-regulation, or lower ability to manage schedules may feel it hard to learn a language through the multimodal pedagogy. Teachers could also improve peer interactions, train users' technological skills, and help them arrange their learning tasks (Li, 2020). Furthermore, rural high school teachers may be confronted with numerous obstacles to multimodal pedagogy such as digital skills and infrastructures, multimodal tools and writing training (Howell, 2018). The less developed areas with poorer digital infrastructures may fail to provide

enough equipment to conduct multimodal language pedagogy. Implementation of the multimodal pedagogy is unavoidably confronted with numerous challenges such as perception of the approach, instructional training, and teachers' resistance to change (Yi, & Angay-Crowder, 2016). Students who are voluntary to join may refuse to learn the multimodal approach. Teachers with poor information technological literacy may also resist changing their traditional pedagogical approach.

Given the previous inconsistent findings, we propose two research questions: (1) does the multimodal language pedagogy lead to better language learning achievements than the traditional one? (2) Do participants positively evaluate the multimodal language pedagogy compared with the traditional one? We propose a null hypothesis, i.e. the multimodal language pedagogy does not lead to significantly higher language learning achievements than the traditional one.

Methods

Participants

We randomly selected participants (N=59) majoring in English language from a reputable public university in China. They were randomly divided into four classes of English language, i.e. Classes 1 (N=15), 2 (N=12), 3 (N=15), and 4 (N=17). All of them were undergraduate students recruited from different areas of China based on the scores of College Entrance Examination. There are no significant differences in their scores of English language proficiency because the University requires a criterion of English language proficiency for admission. The treatment lasted for one semester. At the initial stage, all of them did not receive any formal education of general linguistics. We thus consider their knowledge of general linguistics at the same level.

Research instruments

We adopted a test to retrieve quantitative data regarding participants' knowledge of general linguistics and a questionnaire to retrieve qualitative data regarding students' comments on the multimodal language pedagogy.

The linguistics test

Three experienced linguistics professors designed the test to retrieve their achievements of general linguistics. All of them reviewed the test and raised their own opinions on the design, revision, and confirmation of the test. The final test used in this study was the product agreed upon and revised by three professors of linguistics. The test includes three items totaling 100 points. The first item requires test takers to fill in the blanks in 15 sentences, each blank accounting for 2 points. The second item require them to define 6 linguistic terms, each accounting for 5 points. The last item requires them to answer 4 questions, each accounting for 10 points.

The questionnaire

The questionnaire aims to retrieve participants' comments on the multimodal language pedagogy. We obtained participants' consent to use the data merely in this study. Their personal information also remains confidential. Participants were encouraged to answer an open-ended question "Will you please provide your opinions on benefits, challenges and suggestions for Multimodal language learning?" by keying in a blank as many words as they desire. Those who filled the blank will obtain proper rewards immediately.

Research procedure

The treatment lasted for one semester. At the initial stage, participants who met the admission requirements were randomly selected and divided into four classes, where Classes 2 and 4 were classified as experimental group (N=29), while Classes 1 and 3 were control group (N=30). The experimental group received the multimodal language pedagogy combining WeChat, Rain Classroom, MOOCs, with traditional face-to-face multimedia projecting system-assisted learning. The control group received the traditional face-to-face multimedia projecting system-assisted learning without the assistance of Rain Classroom, WeChat, and MOOCs. After one semester's treatment, the same linguistics test was administered to both control and experimental groups. At the end of the semester, we also collected qualitative data through the questionnaire, where participants were required to express their opinions on the multimodal language pedagogy by filling the blanks (Figure 1).

Results

We obtained the results using both quantitative and qualitative data. The former was solicited from the questionnaire, while the latter was solicited from the open-ended questions.

Results from the questionnaire

In order to determine the specific program to analyze the data obtained, we identify the distribution of data of both the control and experimental groups.

Table 1. Tests of Normality

Item	Group	Kolmogorov-Smirnov ^a	Shapiro-Wilk				
Statistic	df	Sig.	Statistic	df	Sig.		
Score	Control Group	.272	30	.000	.762	30	.000
Experimental Group		.106	29	.200*	.946	29	.145

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Both Kolmogorov-Smirnov and Shapiro-Wilk tests show that data from the control group are not normally distributed ($p < .01$), while the data from the experimental group are normally distributed ($p > .05$) (Table 1). We, therefore, determine to examine the differences using non-parametric tests.

Table 2. A Mann-Whitney test

Item	Group	N	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2-tailed)
Score	Control Group	30	24.98	749.50	-2.286	.022
Experimental Group	29	35.19	1020.50			

The Mann-Whitney test finds that the score of the experimental group is significantly ($Z = -2.286$, $p = 0.022$) higher than that of the control group. We thus reject the null hypothesis and conclude that the multimodal language pedagogy ($MR = 35.19$) leads to significantly higher language learning achievements than the traditional one ($MR = 24.98$).

Results from the open-ended questions

We obtained qualitative data from the open-ended question. We obtained a total of 100 comments. After removing some invalid comments ($N = 33$), we finally analyzed 67 comments. The comments were written in either English or Chinese. To conveniently analyze them, we translated the Chinese comments into English and carefully checked and corrected the English transcripts with an aim to making them meet academic criteria. The improved comments were then double checked by three experienced researchers, followed by coding and categorization based on the qualitative analytical scheme proposed by Miles and Huberman's (1994). The occurrence of keywords and themes were then identified using Wordsmith Tools. The results were then classified based on the technology acceptance model (TAM) (Davis, 1989).

We classified the data in terms of perceived usefulness and perceived ease of use of the multimodal language pedagogy based on the framework of TAM. TAM has been widely accepted as an indicator of the acceptance of technology designed for educational purposes. Perceived usefulness and perceived ease of use are two important constructs determining the user behavior of educational technology. Perceived usefulness indicates the belief of users that the technology is useful to their learning, and perceived ease of use suggests users' belief that the technology is easy to use. In case that both constructs reach higher levels of measurement, users will possibly accept the technology and continue to use it. We also classified the comments regarding benefit, challenges, and suggestions for the multimodal language pedagogy based on the occurrence frequency of key words.

Perceived usefulness

Some respondents argue that the multimodal language pedagogy is useful and the specific tools, i.e. Rain Classroom, WeChat, and MOOCs are also useful to their language learning. For instance, a respondent (No. 14) said "Multimodal language learning can arouse students' interest in participating in class activities as participation can involve students to learn more." This answer reflects the respondent's interest in the multimodal language pedagogy and the plentiful learning resources the learner can have a convenient access to. No. 126 respondent said "Rain Classroom is useful since I can synchronously view the coursework through it." This shows that Rain Classroom can provide a fair opportunity of reviewing the coursework at their will and they can also download the coursework through the platform. No. 281 respondent said "MOOCs is the best platform to motivate myself." This participant believes that MOOCs are motivating and can possibly encourage her to join learning.

However, other participants negatively evaluate the multimodal language pedagogy in terms of its perceived usefulness. For example, No. 307 respondent said "Frequently using digital tools may distract me and waste my energy. It is not useful for me to concentrate on learning contents via the WeChat platform. Digital tools can not only distract me but also harm my eyes although they may bring convenience." This shows that multimodal tools act as distracters and pose threat to health, which may hinder the progress of multimodal language pedagogy. No. 316 respondent negatively evaluates multimodal language pedagogy by asking some questions. He proposed the questions, i.e. "Are the multimodal interactions as useful as the face-to-face ones? Can the multimodal classroom imitate the psychological states of both students and teachers to achieve better pedagogical effectiveness?" He implied that the multimodal language pedagogy might fail to produce better learning outcomes than the traditional approach due to inconvenient interactions and psychologically negative influence.

Perceived ease of use

Some respondents consider it an easy pedagogy to follow. For example, No. 158 respondent said "They are useful tools to learn English easier." This indicates that this student can easily use the tool to acquire knowledge. No. 19 respondent said "It is a way to make save the PPT easier. But the interaction is not enough." This suggests this learner can easily download the coursework from the multimodal pedagogical platform although the multimodal interactions may be not so satisfactory. No. 312 said "The

tool can play back. It is easy and convenient.” This student may like this multimodal pedagogy and possess a higher level of perceived ease of use of the multimodal tools since she considered them easy and convenient.

Others negatively assess the ease of use of multimodal tools. For instance, No. 178 said “I hope to simplify the learning process, enhance interactivity and affordability, and increase the richness of courses.” This indicates that this student does not think the multimodal language pedagogy is easy to follow. She feels it hard to afford and interact. However, she expects more variety of courses provided through the platform of MOOCs. This may indicate that she finds some merits of MOOCs. No. 242 respondent said “it is difficult for me to learn English grammar.” This student may believe that learning grammar may be carried out through the traditional approach. The multimodal pedagogy may be not appropriate for grammar learning.

Benefits

There are some respondents expressing benefits of the multimodal language pedagogy. No. 1 respondent said “I think this model is beneficial and I will continue using it.” This student, deciding to continue the user behavior, well accepts the multimodal language pedagogy. No. 13 respondent said “This kind of learning allows students to preview and review at anytime and anywhere, which will improve students’ learning efficiency. But the process of using the MOOCs platform is not that satisfactory, and it needs to pay much more attention to user experience.” This student values the multimodal language pedagogy due to its convenience and flexibility although she is not satisfied with the experience of MOOCs. No. 156 respondent said “I think it’s very effective. It is a great way of learning.” No. 173 respondent said “it is an efficient method for language learning”. It seems that both students have enjoyed the multimodal language learning experience and consider it an effective mode.

Challenges

However, there are numerous respondents expressing the challenges the multimodal language pedagogy may be confronted with. No. 130 respondent said “It is hard to be involved in studying by these. I really dislike these and hope that less teachers use these for a class.” This student shows her strong dislike of the multimodal language pedagogy due to the distractions caused. No. 183 respondent said “I wish a blended pedagogy combining both online and offline teaching but the traditional face-to-face teaching is beneficial for detailed explanation. It is frustrating and annoying to frequently change teaching applications.” This student prefers the blended pedagogy rather than the multimodal approach which requires frequent changes of learning tools. No. 325 respondent said “It is troublesome to learn through one online platform, let alone three platforms. It is distracting.” This student prefers the traditional offline to the online learning, which may be caused by troublesome use of an online platform. No. 333 respondent said “I really just utterly dislike it. If I wanted a media class where computers take the place of actual teachers, I wouldn't have gone to school.” This student shows his strong resistance against multimodal language pedagogy and suggests that he prefers the traditional approach.

Suggestions

Respondents also provide constructive suggestions for the multimodal language pedagogy. No. 324 respondent said “I suggest that the various online platforms can be combined together to improve the pedagogical effectiveness via cooperation”. A well combined multimodal approach may be able to reduce distractions and thus make them focus on the learning contents. No. 154 respondent said “As an undergraduate student, I have a lot of classes and assignments. Sometimes, we might find extremely exhausted to finish all of our online homework and essays. If the teachers can provide more flexible online class time schedule for our students, it’s may be good for our study journey.” To reduce students’ overload, the assignment schedules of the multimodal approach could be flexible and allow for enough space and time. No. 113 said “I wish the university could provide free access to the Internet because the Internet connection is costly”. Digital infrastructure is a solid foundation for the success of multimodal language pedagogy. Educational institutes could make every effort to lower down the Internet connection costs and thus facilitate students’ use of online resources.

Discussion

It is rational to conclude that the multimodal language pedagogy could lead to significantly higher linguistic knowledge than the traditional approach. Before class, the multimodal approach provides free access to MOOCs, where students can preview what will be learned in class. The teacher can also deliver the coursework to students through Rain Classroom, which can be accessed on the WeChat platform. Students can also interact with peers or teachers in a WeChat group. However, in the traditional approach, students can merely preview the contents by reading the book or other available materials. The traditional approach can also provide fewer opportunities for interactions.

In class, the multimodal approach enables the teacher to make various meanings of linguistic terms connected to specific contexts by organizing learning activities. For example, the teacher can create a sentence consisting of a subject and predicate to connect the linguistic term “syntax” and send the term to students’ smart phones through Rain Classroom. This context-based meaning can impress students and facilitate their understandings. The teacher can also randomly select a student to perform a given learning activity such as a quiz or a test. In this way, the interactions will be enhanced. The interactions also occur by way of directly calling names or voluntary question answer. Students can express their opinions anonymously by keying in the Rain Class platform. However, in the traditional approach, the teacher merely presents the coursework through the traditional multimedia projecting system.

After class, the multimodal approach provides free access to MOOCs for students to review the contents that have been learned in class. They can also post difficult questions on the forum for further discussion. The teacher can also check students’ learning progress or participate in the discussion. Students can also interact with teachers and peers through the WeChat group. They can also view videos, listen to audios, and do exercises on the MOOCs platform. The traditional approach can also allow for

interactions in the WeChat group. The difference lies in the MOOCs platform. Students receiving the traditional approach have no access to MOOCs.

While the multimodal language pedagogy may produce positive language learning outcomes, there is still much room to improve its pedagogical design. Designers and teachers could make every effort to combine the digital tools with an aim to reducing the distractions and overloads on students. They could train students to use the digital tools to make them skilful in handling them. Teachers could practice more to be familiar with the use of multiple digital tools, increase students' motivation to participate in the multimodal pedagogy, improve their concentration on learning, decrease their effort spent on viewing the smart phones, and facilitate the teaching effectiveness via coordination of various platforms. Educational institutes could also try to lower down the costs students spent receiving the multimodal language pedagogy.

Conclusion

Major findings

Generally consistent with previous studies (e.g. Li, 2020; Yelland, 2018), the study finds that the multimodal language pedagogy may improve language learning outcomes compared with the traditional one although there are still many disputes over this approach.

Limitations

There are several limitations to this study. Firstly, the study was implemented within a Chinese context, whose result might not be generalizable to other contexts. Secondly, the multimodal language pedagogy in this study is limited to WeChat, Rain Classroom, and MOOCs, and other multimodal approaches are not explored. Thirdly, the sample is limited to students majoring in English language, while other majors are not involved.

Future research directions

The essence of the multimodal language pedagogy may be how to appropriately design rather than what digital tools are involved. Future research may focus on how to design effective multimodal language pedagogy by reducing the distractions and increase the interactions.

Declaration

Competing interests: The author declares no competing interests.

References

Ajayi, L. (2008). Meaning-Making, Multimodal Representation, and Transformative Pedagogy: An Exploration of Meaning Construction Instructional Practices in an ESL High School Classroom. *Journal of*

language identity and education, 7(3-4), 206-229. <https://doi.org/10.1080/15348450802237822>

Archer, A. (2017). Using multimodal pedagogies in writing centres to improve student writing. *Stellenbosch Papers in Linguistics Plus-Spil Plus*, 53, 1-12. <https://doi.org/10.5842/53-0-730>

Berger, R., & Zezulkova, M. (2018). A remaking pedagogy: adaptation and archetypes in the child's multimodal reading and writing. *Education*, 46(1), 64-75. <https://doi.org/10.1080/03004279.2016.1178316>

Burgess, J., & Rowsell, J. (2020). Transcultural-affective flows and multimodal engagements: reimagining pedagogy and assessment with adult language learners. *Language and education*, 34(2), 173-191. <https://doi.org/10.1080/09500782.2020.1720226>

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS quarterly*, 13 (3), 319–340.

Early, M., Kendrick, M., Potts, D. (2015). Multimodality: Out from the Margins of English Language Teaching. *TESOL quarterly*, 49(3), 447-460. <https://doi.org/10.1002/tesq.246>

Howell, E. (2018). Obstacles to digital, multimodal pedagogy in rural high schools. *Writing and Pedagogy*, 10(1-2), 297–321. <https://doi.org/10.1558/wap.33761>

Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of Research in Education*, 32, 241–267. <https://doi.org/10.3102/0091732X07310586>

Jewitt, C., & Kress, G. (Eds.). (2003). *Multimodal literacy*. New York, NY: Peter Lang.

Kang, R., Mehranian, Y., & Hyatt, C. (2017). Incorporating an Image-Based, Multimodal Pedagogy into Global Citizenship Education. *International journal of education and the arts*, 18(23).

Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. New York, NY: Routledge.

Le Roux, K., & Kloot, B. (2019). Pedagogy for modeling problem solving in engineering dynamics: a social semiotic analysis of a lecturer's multimodal language use. *European journal of engineering education*, 45(4), 631-652. <https://doi.org/10.1080/03043797.2019.1657068>

Li, M. M. (2020). Multimodal pedagogy in TESOL teacher education: Students' perspectives. *System*, 94, 102337. <https://doi.org/10.1016/j.system.2020.102337>

Lotherington, H., & Jenson, J. (2011). Teaching multimodal and digital literacy in L2 settings: New literacies, new basics, new pedagogies. *Annual Review of Applied Linguistics*, 31, 226–246. <https://doi.org/10.1017/S0267190511000110>

Reyes-Torres, A., & Raga, M.P. (2020). Multimodal Approach to Foster the Multiliteracies Pedagogy in the Teaching of EFL through Picturebooks: The Snow Lion. *Atlantis-Journal of the Spanish association of Anglo-American studies*, 42(1), 94-119. <https://doi.org/10.28914/Atlantis-2020-42.1.06>

Ryan, J., Scott, A., & Walsh, M. (2010). Pedagogy in the multimodal classroom: an analysis of the challenges and opportunities for teachers. *Teachers and teaching*, 16(4), 477-489. <https://doi.org/10.1080/13540601003754871>

Seau, L.S., & Azman, H. (2020). Introducing a Responsive Multimodal Oral Presentation Pedagogy: Integrating TED Videos with Web 2.0, Collaborative Learning and Teacher Feedback. *RELC Journal*, 0033688220945426. <https://doi.org/10.1177/0033688220945426>

Shepard-Carey, L. (2020). Making sense of comprehension practices and pedagogies in multimodal ways: A second-grade emergent bilingual's sensemaking during small-group reading. *Linguistics and education*, 55, 100777. <https://doi.org/10.1016/j.linged.2019.100777>

Song, K., Williams, K.M., Schallert, D.L., & Pruitt, A.A. (2021). Humor in multimodal language use: Students' Response to a dialogic, social-networking online assignment. *Linguistics and Education*, 63, 100903. <https://doi.org/10.1016/j.linged.2021.100903>.

Walsh, M., Durrant, C., & Simpson, A. (2015). Moving in a Multimodal Landscape: Examining 21st Century Pedagogy for Multicultural and Multilingual Students. *English in Australia*, 50(1), 67-76.

Yelland, N. J. (2018). A pedagogy of multiliteracies: Young children and multimodal learning with tablets. *British journal of educational technology*, 49(5), 847-858. <https://doi.org/10.1111/bjet.12635>

Yi, Y., & Angay-Crowder, T. (2016). Multimodal Pedagogies for Teacher Education in TESOL. *TESOL quarterly*, 50(4), 988-998. <https://doi.org/10.1002/tesq.326>

Figures

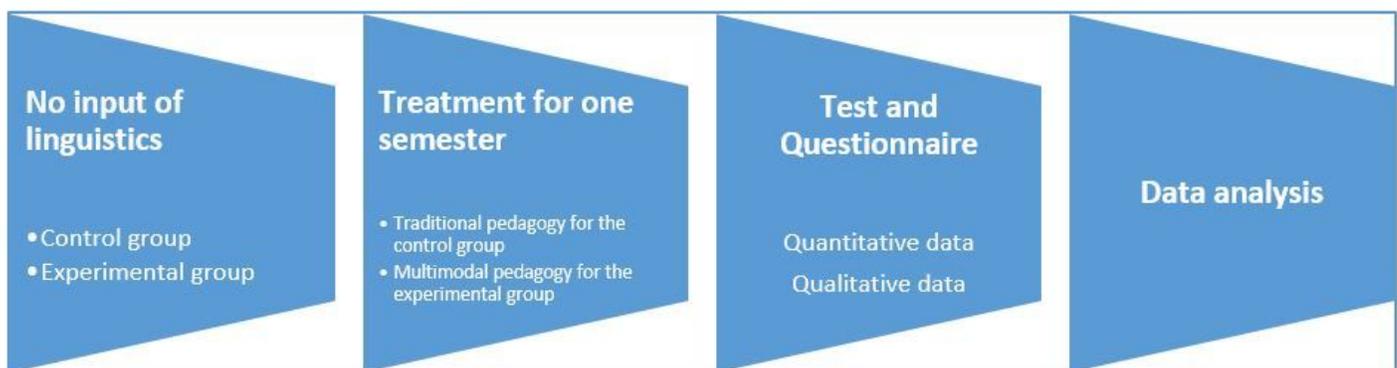


Figure 1

The research procedure