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Incorporating Computer-Assisted Language Learning for Standardized Test of Academic English Proficiency (STAcEP) in the Post-Covid-19-Era: A Quantitative Method

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Abstract. A major shift of online teaching and learning in the post-covid-19-era requires a demanding attention for research and development in the use of technology assisting language learning. One of the aspects is Computer-Assisted Language Learning (CALL) in which it supports opportunities for interaction among learners and teachers including academic English classes. Adopting Lee et al.'s questionnaire (2016) related preferred learning style and the use of computer technology for language learning, this study explores the relationship between CALL incorporation in the Standardized Test of Academic English Proficiency (STAcEP) score and learning styles. It further verifies if the demographic variables of gender and age would make a difference. Ninety-eight foreign language learners from non-English department background in a tertiary level participated in this quantitative study. By contrasting and analyzing data sources, and the results obtained from the results of multiple regression analysis examining the five aspects of the survey and learners' STAcEP scores. Findings highlighted the benefits of optimizing preferred learning styles and the use of CALL in academic English classes, particularly for English as a foreign language (EFL) learners.

INTRODUCTION

The dynamic change in education has currently shifted from conventional meeting to virtual one during to the post-COVID-19 19 pandemic era. Common challenges faced by instructors and learners are related to information and technology problem, task design, online interaction, feedback, assessment, and evaluation[1–4]. The pandemic has taught educational parties to quickly adapt the transition form of classroom interaction. Although online learning had expectedly been problematic, teachers and students found it more successful mainly due to its flexibility and convenience. Computer assisted language learning (CALL) has facilitated features as well as internet to support online learning. Video conferencing and learning management system platform have been popular today to ensure lesson objectives are achieved. Previous studies reported that online learning boosted self-regulated learning, effective class, interactive quizzes and a new virtual communicative discourse[5–11].

Students' self-regulation has increased during online classes since they have to track their self-paced progress according to course objectives. Social distancing has forced students to be more independent since there is no one face-to-face interaction. However, this self-regulated learning is affected by clear course design, interactive feedback, and interactive scaffolding[8]. Although online learning can enhance students' autonomy learning, teacher's guidance and support are essential to avoid misconception of about learning tasks[10]. Therefore, self-regulated learning is scaffolded when there is convenient prompts and interactive feedback. This process will train students to know which information they missed, which part of task they should improve, and what steps they have to take to achieve their learning goals as expected. The quality of interactive learning process will further give positive impact to students'

comprehension and learning outcomes. In addition, instant feedback from the tutor will no longer make distance meaningful.

Students claimed that virtual meeting is more convenient to agree a time for consultation[12]. It is also helped them to be more focus than face-to-face meeting since they did not consider about offline meeting preparation. Both teachers and students do not need to think about how far the distance they should commute. However, human interaction cannot be separated from interactive learning. Therefore, video conferencing and well-structured task design to develop critical thinking are imperative in online learning. Studies reported that reflective learning provided in learning management system or online media platform is an important key to succeed in virtual class[13,14].

Moodle, one of learning management system, has provided various task designs to develop interactive learning. Several types of quizzes such as multiple choice, fill-in-the-blanks, essay, matching, true-false, and drag-and-drop can be a meaningful tool for students' online task activities. These features can improve academic productivity when it meets some requirements: having easy accessed resource database support, having customized and automated feedback, having automated marking for the tutors, shuffling quiz questions and using high order thinking question items to avoid plagiarism[15,16]. Early studies reported that task designs provided in Moodle statistically enhance their learning engagement. Moodle also helps the tutors to measure facility index and discrimination index by having psychometric analysis, therefore validity and level of difficulty of test item can be analytically evaluated[17–21].

This new virtual communicative interaction through computer technology, including self-regulation development, new normal task designs and course sequences, have encouraged students to use their learning strategy achieving the course goals. While online classroom evaluation to the students' achievement has recently studied, research and development in the use of technology assisting language learning and its relation to students' characteristics, learning styles and performance remains under-explored. This study aims to investigate the relationship between CALL used language learning course with students' achievement and learning styles under the following research questions (RQs):

1. What are the predictor variables to the students' score performance?
2. How well do age and gender predict students' preferred learning style?
3. Is there any significant contribution of age, gender, and preferred learning style to the students' score of performance simultaneously?

METHOD

This research employed quantitative design and was conducted in a private university in East Java, Indonesia. Quantitative design was used to answer research questions statistically rigorous. An adopted Likert-scale questionnaire from Lee et al. [22]. We used age (X1) and gender (X2) as independent variables. Additionally, preferred learning styles (Y) and score of performance (Z) were dependent variables. Figure 1 illustrates the theoretical research framework of the adapted questionnaire theories. We investigated whether preferred learning style could mediate dependent variables to students' score of performance.
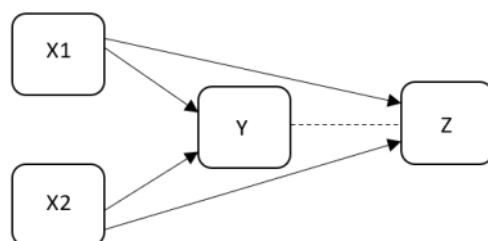
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FIGURE 1. The research framework

The target population of this study was first-year tertiary students who enrolled language learning course named Standardized Test of Academic English Proficiency (STAcEP). This course was compromised listening and reading competence and was a requirement-course for first-year students. Adopting a random sampling method, there were 93 of 100 respondents took part. The respondents filled the questionnaire after taking STAcEP online course via Moodle platform. The respondents characterized a homogeneous group with similar language backgrounds: *Bahasa Indonesia*

as their first language (L1) and English as their foreign language (L2). They had formally studied English for at least six years, compromising 3 years in junior and 3 years in senior high school.

As previously mentioned, the data of age, gender, preferred learning style and STAcEP score of performance were collected through Google form e-questionnaire. This questionnaire measured types of student's learning styles: visual learning (item number 1-4), auditory learning (item number 5-8, tactile learning (item number 9-12), and technology application (item number 13-16). The respondents filled the Likert-scale item by indicating their perspective on a five-point scale, from 1 = strongly disagree to 5 = strongly agree. The data of respondents were on an anonymous basis.

Descriptive statistics and path analysis were used to analyze the quantitative data. The adapted questionnaire was disseminated and filled by 30 participants for try-out purposes. Primary indicators of model fit value had been previously measured using the Tucker-Lewis Index, the comparative fit index, and the root mean square error of approximation, showing CFI = .90, TLI = .89, RMSEA = .05 [22]. While descriptive statistics was used to answer RQ 1, path analysis including major assumption tests and multiple regression tests were conducted to answer RQ 2-3.

RESULTS AND DISCUSSION

This section presents the data analysis results and discussion in two separate subsections. Result sub-section answers research questions proposed. Additionally, the results will be followed by discussion compared to existing theories

Results

RQ 1 addressed to report the hypothesized predictor variables to students' score of performance. As the statistical analysis revealed, the characteristics of the respondents are summarized in the table 1. The Google-form-questionnaire was filled up by 93 students with their ScP ($M = 41.44$, $SD = 18.1$), compromised of 52.7% male students ($n = 49$) and 47.3% female students ($n = 44$).

TABLE 1. The Characteristics of Respondents

Variables	N (%)
Male	49 (52.7%)
Female	44 (47.3%)
Communication Science	16 (17.2%)
Informatics Engineering	53 (57%)
Accounting	15 (16.1%)
Nursing	9 (9.7%)
< 20 years old	68 (73.1%)
> 20 years old	25 (26.9%)

They filled 22 items of questionnaire in the aspects of Age ($M = 1.27$, $SD = .446$), Gender ($M = 1.47$, $SD = .503$), and preferred learning style ($M = 15.83$, $SD = 2.82$). Variable of preferred learning styles had five sub-aspects: visual learning ($M = 15.52$, $SD = 2.25$), auditory learning ($M = 15.43$, $SD = 2.37$), kinesthetic learning ($M = 15.25$, $SD = 2.49$), tactile learning ($M = 14.33$, $SD = 2.52$), and technology learning ($M = 15.83$, $SD = 2.81$).

TABLE 2. The Descriptive Statistics of Variables

Variables	M	SD
Age	1.27	.446
Gender	1.47	.503
Preferred learning styles	15.83	2.82
- Visual learning	15.52	2.25
- Auditory learning	15.43	2.37
- Kinesthetic learning	15.25	2.49
- Tactile learning	14.33	2.52
- Technology learning	15.83	2.81

RQ 2 reported to what extent age and gender predicted students' preferred learning styles. The major assumption test was conducted before measuring standard multiple regression test. A Kolmogorov-Smirnov test revealed a normal distribution, n = 93; Sig. (2-tailed) .230. All tolerance value was more than .10 and value inflation factor (VIF) of each sub-aspect was below 10, signifying no multicollinearity. Heteroscedasticity test using Glejser showed all Sig. value of age and gender were more than .05. To conclude, the major assumption test had been successfully passed. The first regression test was conducted. The total variance explained by the model as a whole was .02%, F (2.90) = .083; p > .001. It was confirmed that age (β = .000; p > .05) had a very less prediction to preferred learning styles, neither did gender (β = .043; p > .05).

Following the quantitative analysis to RQ 3, it aimed to investigate significant contribution of age, gender, and preferred learning style to the students' score of performance simultaneously. The second regression test was conducted to answer this question. The total variance explained by the model as a whole was .03%, F (3.89) = .101; p > .001. It was confirmed that age (β = -.032; p > .05); gender (β = -.040; p > .05); and preferred learning style (β = .035; p > .05) had no significant contribution to score of performance simultaneously.

Discussion

Regarding the significant use of computer assisted language learning in the post-covid19 pandemic era, it is imperative to analyze what factors influencing students' achievement and evaluate to what extent those factors contribute one another. The results to RQ 1, 2, and 3 have been described. In the first result, the characteristics of respondents have been reported, showing that there were 7 participant who did not fill the questionnaire. Following the descriptive statistic's result, the significant impact by the model as a whole was .02%, F (2.90) = .083; p > .001, confirming that age (β = .000; p > .05) had a very less significant contribution to preferred learning styles, neither did gender (β = .043; p > .05). This result in EFL tertiary context concurred the theory proposed by [22] that neither gender nor age had any effect on higher education students' use of computers for self-directed English learning. Early literature found that male and females did not have different competence of technology application in education[6,22,23]. It was commonly generalized that they might have other variables such as learning styles and self-regulated learning that could show different competence. Although the current study implied the similar result to Lee's study which is conducted around five years ago, the dynamic technology development and human mobility across virtual access may influence one's competence in technology[24,25]. Additionally, a more depth data collection such as self-reported learning and interview could be further studied to find phenomena beyond the theory. Teacher's observation also could be added to support the qualitative data.

Another important finding of the recent study is the quantitative analysis result to RQ 3. It is reported that age (β = -.032; p > .05); gender (β = -.040; p > .05); and preferred learning style (β = .035; p > .05) had no simultaneous prediction to score of performance. Although the participants had been differentially more heterogeneous in the EFL context, this statistical result had concurred the previous studies[11,26,27], that age, gender, and learning styles were less significantly predicted the language performance. This result highlighted that in part of EFL context, students did not realize to maximize their learning style for online class. It was also assumed that they needed some adaptation to their preferred learning style regarding the dynamic change from conventional to virtual meeting during the post-covid-19 pandemic era. Instructors and online system management play important roles to guide students developing their learning experiences by providing challenging and relevant CALL materials and pedagogical activities. Visual learners, for example, like to grasp the information through images, graphs, and charts. Thus, instruction of learning management system and its user-interface may support attractive visual features. Materials provided can be also delivered through webinars and recorded teaching video that can be accessed asynchronously. Another learning style is auditory learner. Different from visual learner, this type of learning style like to learn effectively through listening. Screen reader feature in learning management system can facilitate aural learners. Screen readers make it possible for aural learners to listen to information while reading the materials online. Recording materials for listening skills can be used to enhance auditory learners maximizing their self-regulation. While visual and auditory learners are in relation to how materials are provided, kinesthetic learners can have their much freedom in online class. Online classroom mostly relies on self-time management and autonomy work, giving more flexibility to students. Restrictive class-procedures in face-to-face classroom may give less opportunities for kinesthetic learners developing their powerful competence. Students will perform well learning online with the ability to take breaks between assignments. Similar to kinesthetic learners, tactile learners tend to build their knowledge concept by putting the theory to practice. Social distance in an online learning atmosphere does not limit the idea of classroom project. Instructors can provide a meaningful individual or online-group project such as online-drama, storytelling, and presentation. Among all

learning styles preferences, it is imperative for instructors to provide direct feedback to facilitate all learners, designing attractive tasks for them. As the development of CALL, conversational agent can be developed to help instructors providing reflection prompts. Technological approach can bridge the issue between the limitation of instructors giving their feedback and the need of online learners, maximizing their preferred learning styles in an online atmosphere.

CONCLUSION

This paper quantitatively reported that age, gender and learning style in computer use for language learning are not significantly different. However, one individual may have different learning style to another and it could possibly raise in different area of qualitative research. Self-reported learning, rigorous online classroom evaluation through artifacts and interview can explore which aspects can be developed for the use of technology assisting language learning and language performance.

We are aware of limitation of our study, underlining that our population cannot represent of the vast major EFL learners in Indonesia as well as educational background and L2 knowledge characteristic. Further research should obtain data from qualitative research instrument with more heterogenous L2 background to address theoretical and practical concerns.

REFERENCES

1. Moorhouse, B.L. Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic. *J. Educ. Teach.* **2020**, *00*, 609–611, doi:10.1080/02607476.2020.1755205.
2. Capa-Aydin, Y. Student evaluation of instruction: comparison between in-class and online methods. *Assess. Eval. High. Educ.* **2016**, *41*, 112–126, doi:10.1080/02602938.2014.987106.
3. van der Spoel, I.; Noroozi, O.; Schuurink, E.; van Ginkel, S. Teachers' online teaching expectations and experiences during the Covid19-pandemic in the Netherlands. *Eur. J. Teach. Educ.* **2020**, *43*, 623–638, doi:10.1080/02619768.2020.1821185.
4. García-Alberti, M.; Suárez, F.; Chiyón, I.; Feijoo, J.C.M. Challenges and experiences of online evaluation in courses of civil engineering during the lockdown learning due to the covid-19 pandemic. *Educ. Sci.* **2021**, *11*, 1–19, doi:10.3390/educsci11020059.
5. Bouchefra, M.; Baghoussi, M. Algerian EFL University Teachers' Attitudes towards Computer Assisted Language Learning: The Case of Djilali Liabes University. *Int. J. Educ. Lit. Stud.* **2017**, *5*, 132, doi:10.7575/aiac.ijels.v.5n.2p.132.
6. Alrazeq Saeed, F.J.A. Attitudes of Jordanian Undergraduate Students towards Using Computer Assisted Language Learning (CALL). *Int. J. Educ. Lit. Stud.* **2018**, *6*, 12, doi:10.7575/aiac.ijels.v.6n.1p.12.
7. Shamir-Inbal, T.; Blau, I. Micro-learning in designing professional development for ICT teacher leaders: The role of self-regulation and perceived learning. *Prof. Dev. Educ.* **2020**, *00*, 1–17, doi:10.1080/19415257.2020.1763434.
8. Saadati, Z.; Zeki, C.P.; Vatankhah Barenji, R. On the development of blockchain-based learning management system as a metacognitive tool to support self-regulation learning in online higher education. *Interact. Learn. Environ.* **2021**, *0*, 1–24, doi:10.1080/10494820.2021.1920429.
9. Lan, P.S.; Liu, M.C.; Baranwal, D. Applying contracts and online communities to promote student self-regulation in English learning at the primary-school level. *Interact. Learn. Environ.* **2020**, *0*, 1–12, doi:10.1080/10494820.2020.1789674.
10. Song, D.; Kim, D. Effects of self-regulation scaffolding on online participation and learning outcomes. *J. Res. Technol. Educ.* **2021**, *53*, 249–263, doi:10.1080/15391523.2020.1767525.
11. Shokrpour, N.; Mirshekari, Z.; Moslehi, S. Learning vocabulary electronically: Does computer assisted language learning (CALL) instruction have any impacts on iranian efl learners? *Cogent Educ.* **2019**, *6*, 1–20, doi:10.1080/2331186X.2019.1702827.
12. Chang, H. What the COVID-19 Pandemic has Taught Me about Teaching Literature in Hong Kong. *Chang. English Stud. Cult. Educ.* **2021**, *28*, 262–270, doi:10.1080/1358684X.2021.1923396.

13. Syahrin, S.; Abdalla Salih, A. An ESL Online Classroom Experience in Oman during Covid-19. *Arab World English J.* **2020**, *11*, 42–55, doi:10.24093/awej/vol11no3.3.
14. Shoufan, A. Lecture-Free Classroom: Fully Active Learning on Moodle. *IEEE Trans. Educ.* **2020**, *63*, 314–321, doi:10.1109/TE.2020.2989921.
15. Gamage, S.H.P.W.; Ayres, J.R.; Behrend, M.B.; Smith, E.J. Optimising Moodle quizzes for online assessments. *Int. J. STEM Educ.* **2019**, *6*, doi:10.1186/s40594-019-0181-4.
16. Kerimbayev, N.; Nurym, N.; Akramova, A.; Abdykarimova, S. Virtual educational environment: interactive communication using LMS Moodle. *Educ. Inf. Technol.* **2020**, *25*, 1965–1982, doi:10.1007/s10639-019-10067-5.
17. Brown, S. Teaching Science Methods Online During COVID-19: Instructor's Segue into Online Learning. *Electron. J. Res. Sci. Math. Educ.* **2020**, *24*, 14–18.
18. Alshamsi, A.; Zahavich, A.; El-Farra, S. Why Graded Assessment for Undergraduates During the COVID-19 Lockdown? An Experience Introspection. *IAFOR J. Educ.* **2021**, *9*, 55–75, doi:10.22492/ije.9.2.04.
19. Guo, W.Y.; Yan, Z. Formative and summative assessment in Hong Kong primary schools: students' attitudes matter. *Assess. Educ. Princ. Policy Pract.* **2019**, *26*, 675–699, doi:10.1080/0969594X.2019.1571993.
20. Eaton, S.E. Integrity Hour: A Guide to Developing and Facilitating an Online Community of Practice for Academic Integrity. *Online Submiss.* **2020**, 0–7.
21. Lake, R.; Olson, L. Learning as We Go: Principles for Effective Assessment during the COVID-19 Pandemic. *Cent. Reinventing Public Educ.* **2020**, 1–8.
22. Lee, C.; Yeung, A.S.; Ip, T. Use of computer technology for English language learning: do learning styles, gender, and age matter? *Comput. Assist. Lang. Learn.* **2016**, *29*, 1033–1049, doi:10.1080/09588221.2016.1140655.
23. Bahari, A. Computer-assisted language proficiency assessment tools and strategies. *Open Learn.* **2021**, *36*, 61–87, doi:10.1080/02680513.2020.1726738.
24. Jain, S.B. Technology and Education - Prospects of a Future Classroom. *Shanlax Int. J. Educ.* **2021**, *9*, 149–154, doi:10.34293/education.v9i3.3839.
25. Purković, D.; Suman, D.; Jelaska, I. Age and gender differences between pupils' preferences in teaching general and compulsory technology education in Croatia. *Int. J. Technol. Des. Educ.* **2021**, *31*, 919–937, doi:10.1007/s10798-020-09586-x.
26. Chou, M.H. the Impact of the English Listening Test in the High-Stakes National Entrance Examination on Junior High School Students and Teachers. *Int. J. List.* **2021**, *35*, 53–71, doi:10.1080/10904018.2019.1659142.
27. Lee, J.S. The role of informal digital learning of english and a high-stakes english test on perceptions of english as an international language. *Australas. J. Educ. Technol.* **2020**, *36*, 155–168, doi:10.14742/AJET.5319.

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