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OPEN AND DISTANCE E-LEARNING (ODEL) GRADUATE EDUCATION AMONG OVERSEAS FILIPINO WORKERS (OFWS): BASIS FOR A SUPPORT PROGRAM

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ABSTRACT

ODeL graduate education for OFWs was investigated by examining their digital competence, learner support systems, digital infrastructure, levels of engagement, challenges faced, and intentions to continue. A descriptive quantitative method was adopted, with data gathered using a structured questionnaire distributed to 51 OFWs currently undertaking or who have completed ODeL education. Data analysis was conducted using frequencies, percentages, means, and correlations. The results revealed very high levels of digital competence among the participants, especially in digital literacy and communication, as well as an effective learner support system and a highly available digital infrastructure. Very high learner engagement levels were also observed, particularly cognitive engagement. Although challenges related to time zone differences, clashes in work and study schedules, and unstable internet connectivity were experienced, they were overcome due to the effectiveness of the institution's learner support system. Furthermore, a positive relationship was observed between digital competence and engagement, whereas the influence of profile variables was very minimal. On the other hand, intention to persist was very high. Thus, there is a need for more reinforcement of learners' support systems, digital infrastructure, and flexible approaches. Consequently, a program to support OFWs was developed.

Keywords: *ODeL, OFWs, digital competence, learner support systems, digital infrastructure*

INTRODUCTION

The development of ICT has led to a shift toward flexible, web-based Open and Distance e-Learning (ODeL) modes of learning. ODeL allows people, such as Overseas Filipino Workers (OFWs), to enroll in higher education institutions without having to stop their jobs (Arinto, 2016). In the Philippines, the adoption of ODeL programs is increasing, especially in graduate schools (Núñez et al., 2023).

Although there have been many improvements in ICT and the adoption of ODeL, some challenges remain in ICT infrastructure and access. Digital inequalities in internet connection and digital literacy continue to impact students' online education (van Deursen & van Dijk, 2019; Alcaide-Pulido et al., 2025). OFWs face greater difficulties due to job pressure, time zone differences, and a lack of support from other sectors.

Learner support systems play a vital role in improving students' participation, motivation, and educational achievement in ODeL courses (Rotar, 2022). Research shows that effective learner support, coupled with high digital competence, increases online learners' engagement (Cleofas et al., 2021; Garrison et al., 1999; Bandura, 1986).

Although a lot of research has been carried out about ODeL and digital inequalities, few studies address issues concerning OFWs' education. Therefore, this study focuses on the relationships among digital competence, learner support systems, and digital infrastructure and their effects on the engagement and retention of OFWs in ODeL programs.

Statement of the Problem

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This study aimed to examine ODeL graduate education among OFWs.

Specifically, it sought to answer the following:

1. What is the profile of the ODeL learners in terms of the following:
    a. Age;
    b. Gender;
    c. Marital status;
    d. Highest educational attainment;
    e. Number of years of experience with ODeL;
    f. Graduate school program
    g. Host country location;
    h. Location of ODeL institution;
    i. Number of seminars or training related to ODeL; and
    j. Average monthly income?
2. What is the level of competence of OFWs in digital learning, in terms of:
    a. Digital literacy skills;
    b. Online communication and collaboration skills;
    c. Information and media literacy; and
    d. Self-directed and independent learning skills?
3. What is the level of effectiveness of the institution's learner support systems to OFWs enrolled in ODeL, in terms of:
    a. Pedagogical support;
    b. Technical support;
    c. Administrative services; and
    d. Peer interaction and psychosocial support?
4. What is the level of availability of Digital Infrastructure in terms of:
    a. Internet Connectivity;
    b. Devices;
    c. Platform Usability; and
    d. Institutional ICT Support?
5. What is the level of engagement of OFWs in ODeL Graduate School in terms of:
    a. Behavioral Engagement;
    b. Affective Engagement;
    c. Cognitive Engagement?
6. What are ODeL challenges and the moderating or mediating role of support?
7. What is the level of intention to persist or complete the ODeL degree?
8. Is there a significant relationship between the level of competence of OFWs in digital learning and their profile variables?
9. Is there a significant relationship between the level of engagement of OFWs in the ODeL Graduate School and their profile variables?
10. Is there a significant relationship between the level of competence of OFWs in digital learning and the level of engagement of OFWs in ODeL Graduate School?
11. What support program may be proposed based on the results of the study?

Scope and Delimitations

The study explored the influence of digital infrastructure and support mechanisms on engagement in ODeL among OFWs to understand how these can increase motivation and engagement despite barriers in geography, occupation, and technology. Using a quantitative methodology, the study investigated learners' perceptions of three dependent variables: support

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mechanisms (pedagogical, administrative, technical, and psychosocial); digital infrastructure (Internet connectivity, devices, platform usability, and institutional ICT Support); and learner engagement (behavioral, affective, and cognitive). The study involved only OFWs pursuing graduate studies and excluded undergraduate students and learners from other nationalities. The research was based solely on learners' perceptions, not on technical analyses.

Review of Related Literatures

Support mechanisms for learners are indispensable in ODeL, especially for non-traditional learners such as OFWs, given the learning barriers posed by geographic and technological limitations. Contemporary ODeL recognizes interactions, autonomy, and engagement (OECD, 2020; UNESCO, 2021), and this is supported by various theories of self-efficacy and engagement (Bandura, 1986; Garrison et al., 1999). Although academic and technical support are often provided, psychosocial support is often lacking, which is crucial for maintaining motivation (Ahmady et al., 2023; Attiq-ul-Rehman, 2025).

The importance of having sufficient digital infrastructure cannot be overlooked, as it enables people to access education through devices, internet connections, and online tools (ITU, 2025). Studies reveal that good infrastructure can boost learner participation and achievement and increase satisfaction levels (Ren et al., 2024); nevertheless, lack of access and poor connectivity contribute significantly to the digital gap (UNESCO, 2023; van Deursen & van Dijk, 2019).

Learner engagement is an important aspect of ODeL and encompasses behavioral, affective, and cognitive aspects that can impact learning outcomes (Wang et al., 2022; Hu & Xiao, 2025). According to the Community of Inquiry perspective, the teaching, social, and cognitive presences are key, while, according to Self-Determination Theory, intrinsic motivation is influenced by autonomy, competence, and relatedness (Deci & Ryan, 2013; Ryan & Deci, 2023). Research indicates that digital competence and self-regulation skills increase engagement, particularly for working students (Arinto, 2016; Aves et al., 2024).

Despite these results, there is a lack of research on the effects of the intersection of these variables on OFW learning processes. The absence of research in this area necessitates future examination of the role these variables play in facilitating OFW education.

Theoretical Framework

This study focuses on the ***Technology Acceptance Model (TAM)***, which posits that users adopt technology because of its perceived usefulness and ease of use (Davis, 1989; Venkatesh & Davis, 2000). In the ODeL environment, users' perceptions of usefulness and ease of use determine whether learners participate in the activities available on digital platforms. In the case of OFWs, it becomes even more important since they need technologies that can accommodate their dual roles as employees and students. Research findings reveal that factors such as perceived usefulness, system quality, and ease of use contribute to user acceptance of technology in online environments (Venkatesh et al., 2016; Ren et al., 2024; Hu & Xiao, 2025). In the current study, TAM is used to explain how digital infrastructure influences learners' technology use in the ODeL context (Arinto, 2016).

The ***Unified Theory of Acceptance and Use of Technology (UTAUT),*** on the other hand, provides four constructs which would make sure that technology is accepted by people: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003; Venkatesh et al., 2012). In applying the UTAUT concept to ODeL, the focus is on perceptions of technology's usefulness and usability, as well as support from external sources (Tarhini et al., 2017; Dwivedi et al., 2019; Ghazal et al., 2018).

The theory of ***Community of Inquiry*** describes the success of distance learning in terms of cognitive, social, and teaching presence, which promote reflection, cooperation, and learning

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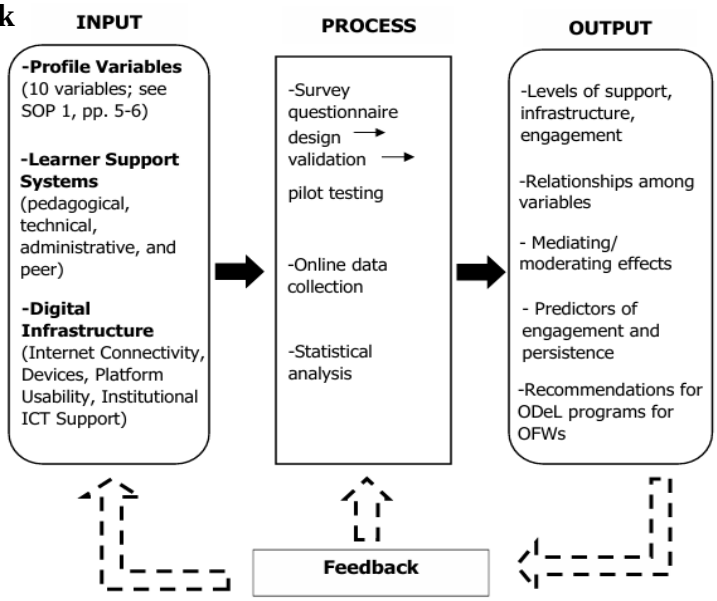
(Garrison et al., 1999; Garrison et al., 2015). Thus, cognitive presence relates to knowledge construction, while social presence concerns interaction, and teaching presence implies teaching design and management (Kreijns et al., 2022; Anderson et al., 2001). Research indicates that both high teaching and social presence can lead to learners' satisfaction and retention in ODeL programs, especially among OFWs (Law et al., 2019; Hu & Xiao, 2025; Arinto, 2016).

The ***Input-Process-Output (IPO)*** model, drawn from systems theory, posits that educational achievement results from interactions among inputs, processes, and outputs (Bertalanffy, 1968; Deibl et al., 2018). In ODeL environments, inputs are the availability of resources, such as infrastructure and support systems, while processes comprise learning activities, including interaction, feedback, and participation, and outputs encompass achievements such as engagement, motivation, and performance (Zawacki-Richter et al., 2018). From the point of view of OFW students, this model underscores how inputs affect the processes that produce relevant outputs, thereby underscoring its importance for this study.

Conceptual Framework



METHODOLOGY

The research adopted a descriptive-quantitative methodology to explore the impact of digital infrastructures and learner support mechanisms on OFWs' involvement in ODeL, with data collected via a survey statistically analyzed using descriptive and correlational techniques.

Research Design

The objectives of the current quantitative study include assessing the impact of digital infrastructure and the learner support system on the engagement level of OFWs participating in ODeL courses. To achieve the stated goals, this study uses a descriptive survey design with 51 participants currently in or who have completed the ODeL program.

Research Steps

Following an extensive review of the literature, a descriptive-quantitative research design was formulated based on the study's aims and the circumstances of OFWs in relation to ODeL learning. Data were gathered using a structured survey questionnaire completed by 51 participants who were either currently enrolled in or had completed ODeL courses. This involved

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assessing four factors: digital competency, learner support system, digital infrastructure, and learner engagement.

Data Collection and Sample Selection

Data collection was conducted through a survey questionnaire administered to OFWs who were currently enrolled in or had graduated from ODeL programs. The survey was intended to obtain their perceptions of digital competence, the learner support system, digital infrastructure, and learner engagement. A total of 51 participants were selected using a feasible sampling method because OFWs are not easily accessible, and a manageable number can still yield valuable information.

Data Analysis Methods

The method of data analysis was based on a quantitative statistical framework, in which responses from the survey questionnaire were systematically analyzed using measures such as frequency, percentage, and weighted mean to characterize the variables, while correlational analysis was used to examine relationships between variables.

Research Hypotheses and Validation

In addition, the study expected that digital skills, learner support systems, and digital infrastructures would significantly impact learner engagement amongst OFWs using ODeL, and this expectation was confirmed by the results of the correlation analysis, which showed a notable connection, especially between digital skills and learner engagement, but not between the others.

Study Limitations and Ethical Considerations

In this regard, ethics have been followed in this research by obtaining informed consent from all respondents and ensuring anonymity and confidentiality. As for limitations, the present study is limited to a sample of 51 OFWs and does not include qualitative elements. The study has focused solely on respondents' perceptions and adopted a purely quantitative approach.

RESULTS AND DISCUSSION

SOP 1. What is the profile of the ODeL learners in terms of the following: a. Age; b. Gender; c. Marital status; d. Highest educational attainment. Number of years of experience with ODeL. Graduate school program g. Host country location; h. Location of ODeL institution; i. Number of seminars or training related to ODeL; and j. Average monthly income?

The study used OFWs with different profiles, including age, sex, marital status, educational background, experience with ODeL, master's programs pursued, host countries, institutional affiliations, training, and salaries.

Diverse Profiles: ODeL learners' diverse profiles suggest that the ODeL modality enables learners to engage in studies while juggling other life demands.

SOP 2. What is the level of competence of OFWs in digital learning, in terms of: a. Digital literacy skills; b. Online communication and collaboration skills; c. Information and media literacy; and d. Self-directed and independent learning skills?

Findings indicate that OFWs are highly digitally literate in digital literacy, digital communication, information literacy, and self-directed learning competencies.

High Digital Readiness: This indicates that the respondents have the necessary capacity to effectively use digital technology and manage their own learning process in the ODeL mode.

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SOP 3. What is the level of effectiveness of the institution's learner support systems to OFWs enrolled in ODeL, in terms of: a. Pedagogical support; b. Technical support; c. Administrative services; and d. Peer interaction and psychosocial support?

Support systems for the learners were found to be quite effective, especially from a pedagogical, technical, and administrative standpoint, but less emphasis was placed on psychosocial support.

Effective but Uneven Support: Despite the institutions' ability to provide sufficient academic and technical support, their failure to emphasize psychosocial support might affect learners emotionally.

SOP 4. What is the level of availability of Digital Infrastructure in terms of: a. Internet Connectivity; b. Devices; c. Platform Usability; and d. Institutional ICT Support?

The digital infrastructure rating was very high across internet connectivity, devices, user-friendly platforms, and ICT support, despite some instances of internet connectivity challenges.

Strong Infrastructure with Minor Gaps: The presence of technological infrastructure enables participants to engage in ODeL effectively, though challenges with internet connectivity persist.

SOP 5. What is the level of engagement of OFWs in ODeL Graduate School in terms of: 7 a. Behavioral Engagement; b. Affective Engagement; c. Cognitive Engagement?

High learner engagement was noted not only in behavior but also in affect and cognition, with the latter being the highest.

Deep Cognitive Engagement: *This implies that learners are fully engaged in critical and significant thinking processes, even with the stress of working abroad.*

SOP 6. What are ODeL challenges and the moderating or mediating role of support?

Respondents reported challenges such as time-zone differences, work–study conflicts, and unstable internet connectivity; however, these were mitigated by institutional support systems.

Coping with Challenges Using Support Mechanisms: While structural and technical issues must be considered, an effective support mechanism for learners is essential to enabling OFWs to cope and participate effectively.

SOP 7. What is the level of intention to persist or complete the ODeL degree?

There was a very strong intention to persist among OFWs, indicating their dedication to completing their ODeL courses.

Strong Persistence and Motivation: Even amid difficulties, learners remain committed to continuing their studies, underscoring the importance of education to them.

SOP 8. Is there a significant relationship between the level of competence of OFWs in digital learning and their profile variables?

Results revealed a weak to non-existent relationship between digital competence and profile variables.

Digital Competence Unaffected by Demographics: It implies that demographic attributes have little impact on digital competence, thereby suggesting adaptability among OFWs.

SOP 9. Is there a significant relationship between the level of engagement of OFWs in the ODeL Graduate School and their profile variables?

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Similarly, the impact of the profile variables on learner engagement was minimal at best.

Engagement Not Determined by Demographics: Learner engagement seems to depend more on the learning environment and facilitation than on demographic factors.

SOP 10. Is there a significant relationship between the level of competence of OFWs in digital learning and the level of engagement of OFWs in ODeL Graduate School?

There is a notable positive correlation between digital competence and engagement.

Digital Skills Lead to Engagement: Increased digital competence leads to greater engagement and participation in ODeL learning tasks.

SOP 11. What support program may be proposed based on the results of the study?

As per the research findings, a support system was recommended that emphasizes digital literacy, psychosocial support, and ICT services.

Improved Targeted Support Systems: This recommendation was made to further enhance engagement, retention, and success among ODeL learners.

SUMMARY

Results from the quantitative study on Overseas Filipino Workers (OFWs) using ODeL showed significant levels of digital competence, learner support effectiveness, digital infrastructure availability, and learner engagement. The respondents demonstrated high digital readiness, particularly in communication and self-regulated learning, enabling them to participate actively in the online learning environment. The support system provided by institutions, particularly academic and technical, combined with the availability of digital infrastructure, helped maintain engagement, where cognitive engagement became dominant. Despite time zone differences, work-study conflicts, and poor internet connectivity, the learners remained highly motivated to continue participating in the learning process.

CONCLUSIONS

Moreover, the motivation and involvement of OFW students undertaking courses via ODeL were facilitated by their high level of digital competence, as well as a functional mechanism for providing learner support services. This is due to effective digital infrastructure and learning environments; learners taking ODeL courses had no difficulty engaging with the course of study despite their busy, hectic schedules and physical limitations. In addition to these hindrances, other engagement challenges, such as time zone differences and connectivity issues, were overcome with institutional support. Additionally, it is important to understand that the strong relationship between digital competence and engagement means that improvements in learners' digital competence will contribute to engagement and success in their learning.

RECOMMENDATIONS

The recommendations that follow are grounded in the results and conclusions of the research:

- There is a need for educational institutions to upgrade their learner support services, particularly psychosocial support, to mitigate learners' isolation as well as promote their well-being as OFW learners.

- Continued investment in and upgrading of ICT services and infrastructure that include reliable internet connectivity, user-friendly platforms, and technical support services should be ensured to help learners from various geographical locations adjust to online class

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sessions.

● Programs to train learners in digital competence and self-directed learning must continue to enhance their participation and academic performance in ODeL.

● Learning approaches like asynchronous learning, module lessons, and flexible deadlines for assignment submissions should be encouraged to cater to the OFWs' work schedules and time zones.

● Further research to evaluate the impact of ODeL on OFWs can be done by carrying out large-scale studies and qualitative research to have a comprehensive understanding of how OFW learners experience ODeL.

● Besides, ongoing evaluation of the programs of educational institutions should be carried out through the learners' input and academic performance.

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REFERENCES

Ahmady, S., Khoshgoftar, Z., Toofaninejad, E., Sohrabi, S., Kalantarion, M., & Simpson, O. (2023). Identifying dimensions and components of student support system in virtual learning: A scoping review. *Journal of Education and Health Promotion, 12*(1), 332. https://doi.org/10.4103/jehp.jehp_146_23

Alcaide-Pulido, P., Gutiérrez-Villar, B., Ordóñez-Olmedo, E., & Pérez-Escolar, M. (2025). Analysis of faculty readiness for online teaching: assessing impact and adaptability in diverse educational contexts. *Smart Learning Environments, 12*(1). https://doi.org/10.1186/s40561-024-00353-2

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), 1–17. https://doi.org/10.24059/olj.v5i2.1875

Arinto, P. B. (2016). Issues and challenges in open and distance e-learning: Perspectives from the Philippines. *Asian Association of Open Universities Journal, 11*(1), 1–13. https://doi.org/10.19173/irrodl.v17i2.1913

Attiq-ul-Rehman, A., & Shahzadi, A. (2025). Learner support systems in distance learning education systems (comparative analysis of VU and AIOU). *Journal of Digital Learning and Education, 5*(1), 41–52. https://doi.org/10.52562/jdle.v5i1.1507

Aves, B. N., Ambat, S. M., Aves, B. J. M., Diesca, J., & Villegas, E. (2024). Student engagement in an online class. *International Journal on Open and Distance e-Learning, 9*(2). https://doi.org/10.58887/ijodel.v9i2.269

Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ, 1986*(23-28), 2.

Asian Research Journal of Education, 2026
E-ISSN: 3028-0842
P-ISSN: 3028-0834
Vol. 3 No. 2
DOI: https://doi.org/10.66206/eduheart.2026.326

Bertalanffy, L. von. (1968). *General system theory: Foundations, development, applications*. New York: George Braziller.

Cleofas, J. V., Eusebio, M. C. S., & Pacudan, E. J. P. (2021). Anxious, Apart, and Attentive: A Qualitative Case Study of Overseas Filipino Workers' Families in the time of COVID-19. *The Family Journal*. https://doi.org/10.1177/10664807211006339

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

Deci, E. L., & Ryan, R. M. (2013). Self-determination theory. In *Handbook of Theories of Social Psychology* (1st ed., Vol. 1, pp. 416–437).

Deibl, I., Zumbach, J., Geiger, V. M., & Neuner, C. (2018). Constructive alignment in the field of educational psychology: Development and application of a questionnaire for assessing constructive alignment. *Teaching of Psychology, 17*(3), 293–307. https://doi.org/10.1177/1475725718791050

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): towards a revised theoretical model. *Information Systems Frontiers*, *21*(3), 719–734. https://doi.org/10.1007/s10796-017-9774-y

Garrison, D. R. (2015). *Thinking collaboratively: Learning in a community of inquiry*. Routledge.

Garrison, D., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, *2*(2–3), 87–105. https://doi.org/10.1016/s1096-7516(00)00016-6

Ghazal, S., Al-Samarraie, H., & Aldowah, H. (2018). "I am Still Learning": Modeling LMS Critical Success Factors for Promoting Students' Experience and Satisfaction in a Blended Learning Environment. IEEE Access, 6, 77179–77201. https://doi.org/10.1109/access.2018.2879677

Hu, J., & Xiao, W. (2025). What are the influencing factors of online learning engagement? A systematic literature review. *Frontiers in Psychology, 16*, 1542652. https://doi.org/10.3389/fpsyg.2025.1542652

International Telecommunication Union. (2025). Digital infrastructure investment initiative. https://handle.itu.int/11.1002/pub/82507982-en

Kreijns, K., Xu, K., & Weidlich, J. (2022). Social Presence: conceptualization and measurement. *Educational Psychology Review*, *34*(1), 139–170. https://doi.org/10.1007/s10648-021-09623-8

Law, K. M., Geng, S., & Li, T. (2019). Student enrollment, motivation and learning performance in a blended learning environment: The mediating effects of social, teaching, and cognitive presence. *Computers & Education*, *136*, 1–12. https://doi.org/10.1016/j.compedu.2019.02.021

Núñez, Jayrome; Gula, Louie; Alindan, Evaflor; Colcol, Clinton John; Sangco, Aristonie; Taracina, Jairoh; Dolba, Sammy; Escobañez, Al John; Sumayang, Kevin; Jamisal, Mark Anthony; and Tuscano, Francis Jim (2023) "Continuing The Distance Learning Modality of Graduate Studies in Post-Covid Philippines: A Survey," FDLA Journal: Vol. 7, Article 3. Available at: https://nsuworks.nova.edu/fdla-journal/vol7/iss1/3

Ren, W., Zhu, X., & Liang, Z. (2024). How does internet access quality affect learning outcomes? A multiple mediation analysis among international students in China.

Asian Research Journal of Education, 2026
E-ISSN: 3028-0842
P-ISSN: 3028-0834
Vol. 3 No. 2
DOI: https://doi.org/10.66206/eduheart.2026.326

Journal of International Students, *14*(1), 449–468. https://ojed.org/jis/article/view/5881

Rotar, O. (2022). Online student support: A framework for embedding support interventions into the online learning cycle. *Research and Practice in Technology Enhanced Learning*, *17*(2). https://doi.org/10.1186/s41039-021-00178-4

Ryan, R. M., & Deci, E. L. (2023). Self-determination theory. In F. Maggino (Ed.), *Encyclopedia of quality of life and well-being research*. Springer. https://doi.org/10.1007/978-3-031-17299-1_2630

Tarhini, A., Hone, K., Liu, X., & Tarhini, T. (2017). Examining the moderating effect of individual-level cultural values on users' acceptance of e-learning in developing countries: A structural equation modeling approach. *Interactive Learning Environments*, *25*(3), 306–328. https://doi.org/10.1080/10494820.2015.1122635

UNESCO. (2023). *Global education monitoring report 2023: Technology in education—A tool on whose terms?* UNESCO Publishing. https://doi.org/10.54676/UZVR1696

Van Deursen, A. J., & Van Dijk, J. A. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*, *21*(2), 354–375. https://doi.org/10.1177/1461444818797082

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157–178. https://doi.org/10.2307/41410412

Venkatesh, V., & Thong, J. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the association for Information Systems*.

Wang, R., Cao, J., Xu, Y., & Li, Y. (2022). *Learning engagement in massive open online courses: A systematic review*. **Frontiers in Education, 7**, 1074435. https://doi.org/10.3389/feduc.2022.1074435

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2018). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *Distance Education*, *39*(1), 1–23. https://doi.org/10.1080/01587919.2018.1436377