

## Educenter: Jurnal Ilmiah Pendidikan

Vol 1 No 7 Juli 2022 ISSN: 2827-8542 (Print) ISSN: 2827-7988 (Electronic)





# Students' attitude to virtual teaching of the english language in secondary schools in Oyo State: Implications for students achievement

#### Sheriff Olamide Olatunji

University of Ibadan <u>olatunjisheriff07@gmail.com</u>

Info Artikel:

Received: 2 Juli 2022 Revised:

15 Juli 2022 Accepted : 25 Juli 2022 ABSTRACT

This study investigated students' attitude to virtual teaching of English Language: Implications for students' achievement. The study adopted the survey research design. Three private secondary schools were randomly selected from private secondary schools in Ibadan North Local Government Area, Oyo State. From each school, 50 SSII students were randomly selected making a total of 150 students. One research instrument was used for data collection: Questionnaire on Students' Attitude to Virtual Teaching (r=0.82). Data collected were analysed using descriptive statistics of percentage, mean, standard deviation and inferential statistics of t-test. Findings of the study revealed the weighted mean of 2.499 out of the 4.00 maximum obtainable scores, which is higher than the standard mean of 2.50. This means that students had a good attitude to virtual teaching. There was no significant difference between male and female students' attitude to virtual teaching (t = -.414; df=148; p>0.05). Based on the findings of this study, it was recommended that students should be encouraged to have positive attitude to virtual teaching of English Language. Teachers and students should be trained on how to use different virtual platforms for teaching and learning of English Language.

Keywords: Students' attitude, virtual teaching, English Language, students' achievement



©2022 Penulis. Diterbitkan oleh Arka Institute. Ini adalah artikel akses terbuka di bawah lisensi Creative Commons Attribution NonCommercial 4.0 International License. (https://creativecommons.org/licenses/by-nc/4.0/)

#### INTRODUCTION

English language occupies a unique place in Nigerian education because of its significant role and status in national life, as it remains the official language of business and vital link between the various ethnic groups in the country. English language is one of the compulsory subjects at all levels apart from the fact that it is the language of instruction for all other subjects and formal education gives the opportunities to learn English language (Owolewa, 2000). English language is unique in Nigerian education because of the significant roles it plays. It enhances students' educational attainment and improves their communicative competence. Nigerian government made it a core and compulsory subject for students in Nigerian school. The importance of the language in Nigeria educational system cannot be over-emphasized because it plays a crucial role. Apart from being the medium of instruction, especially at the upper primary, secondary and tertiary levels of education, it is also the language of the textbooks (Ezeokoli, 2005).

Danladi (2013) asserts that English language is the medium of instruction in our schools and compulsory subject that must be passed at all levels of education in Nigeria. It is the language through which all other subjects in the curriculum are taught. The state of English language as a second language in Nigeria and the importance attached to the language, compel numerous Nigerian citizens to learn and speak the language (Ogunsiji, 2004). The language has not only engineered human development through education but it has also conferred other significant opportunities on Nigerians. At different levels of education in Nigeria, students are equipped with life-long knowledge and skills that would make them realise their full potentials as human beings. The skills and knowledge provided by education for human development will not be possible without the English language which the concepts are expressed (Akeredolu-Ale and Alimi, 2012).

Schools in the country are losing long period of learning because of coronavirus outbreak. Moving smoothly from an environment of conventional education to virtual learning could not happen overnight but because nobody knows when the pandemic will disappear, educational institutions decided to engage students at all levels in virtual teaching (Kaur, 2020). Virtual teaching is the use of all forms of electronic media and technologies to facilitate educational process. Virtual teaching has received research attention as an innovative means that influence the educational system in the world which facilitate; partially replacing the familiar face to face technique of knowledge and skill acquisition and delivery. It is a teaching process created by interaction with digitally delivered content, network-based services and tutoring support.

There are different virtual platforms available for teaching and learning: Google classroom, Zoom, You Tube, WhatsApp. Attributes of virtual teaching are flexible instruction and learning that boost independent and self-governed education. The introduction of electronic gadgets like smart phones, tablets and computers has facilitated the provision of education outside the conventional physical classroom. Availability of internet and tools such as Google Docs, Google Hangouts, Skype etc have made education more collaborative, interactive and efficient (Sarker et al., 2019).

Virtual teaching is the use of computer and internet technologies to deliver a broad array of solution to enable learning and improve performance. It is considered as the new method of teaching rather than face to face teaching. It has the ability to offer and share materials in all kinds of formats as e-mails, slideshows, videos, PDFs and word documents (Ghirardini, 2011). It is teaching that is not confined within the walls of a classroom, but that, which expands the possibility of using internet facilities, platforms, satellite links, and related system to access, analyse, create, exchange, and use data, information, and knowledge in ways which until recently, were almost unimaginable (Lokie, 2011).

It involves teaching acquired via interaction with digitally delivered content, network-based services and tutoring support often with any type of on-line tool and media including the Internet, intranets, extranets, simulations and games, virtual worlds, clouds, satellite broadcasts, and web platforms (Jarmon, 2010; Schutt & Linegar, 2013; Pelet & Lecat, 2012). It is carried out through the use and integration of electronic discourses, such as email, portal, downloadable-executable-file, facebook, social networking, web platforms, electronic dissertations and e-portfolios, among others (Wells et al., 2008).

Despite the influx of virtual technologies, it appears that many educators do not see distant teaching as effective as traditional methods. The traditional lecture method, which many teachers currently use in teaching, is unsuitable for teaching some of the concepts in the curriculum especially in this technology driven era. Studies have generally indicated that the use of traditional didactic lectures alone cannot make students to be globally literate and succeed in this information age (Keziah, 2012, Piccoli et al., 2001; Wells et al., 2008). As noted by Vallance et al. (2012), research in the informed use of technology for educational purposes highlights the need to go beyond replication of traditional, didactic practices to an appropriation of digital communication (Warschauer, 1998) facilitated by a constructivist pedagogy (Jonassen, 2000) to support purposeful tasks (S. Martin & Vallance, 2008). New methods of effective teaching and learning, which meet the expectations of the diverse student body and which engage students, should be explored and implemented.

Ekesionye & Okolo (2011) outlined the benefits of e-learning for tertiary institutions to include enabling students to have equal access to quality education with the rest of the world, developing interesting and variety of instructional materials like lecture notes, diagrams, pictures and textbooks, entrenching lecturers and students to the global village, exposing them to international best practices in information technology, inculcating skills for on-line information sourcing for effective teaching, learning and research as well as facilitating knowledge creation and dissemination of information to a wider community. Nwokike (2011) affirmed that virtual teaching facilitates the task of the teacher by promoting performance, enables teachers and students to study at their own pace, reduces the stress inherent in the conventional classroom work for both teachers and students, facilitates access to existing knowledge and skills and saves teachers and learners time and energy.

Research undertaken in the area of attitude and attitude formation shows that attitudes are essentially divided into likes and dislikes (Siragusa & Dixon, 2008). Bhuasiri et al. (2012) found that in developing countries the most significant factors were related to increasing technology awareness and improving attitude toward virtual teaching, enhancing basic technology knowledge and skills, improving learning content, requiring computer training, motivating users to utilise e-learning systems, and requiring a high level of support from the university.

Attitude is an internal state that moderates the choice of personal action made by the individual. This means that attitude is regulates all behaviours. One's behaviour at a time is not caused but is the consequences of what is going on within the individual (Lengzakka, 2006). Ochonogor (2003) notes that an attitude may be thought as an expression of a person's values which results from the influence of the environment, past and present acting upon the personality of an individual. This appears to prove that attitude of individual is learned and somewhat emotional pictures of his personality.

Mkpa (2001) asserts that attitude forms a part of affective domain as one of the three generally classified educational objectives. Mkpa (2001) pointed out that attitude is measurable at different levels adopting suitable items and indices. Attitude can be measured by carefully accepting or rejecting opinions. It is the way of feeling, thinking or behaving towards something or a situation. Attitude is expressible in words or action which depicts one's positive or negative reaction towards something or a given situation (Mkpa, 2001).

Obodo (2002) views attitude as a system of positive or negative evaluation of emotional feelings. Attitude can be formed from an individual's past or present and that it can be positive or negative evaluation of a people, objects, events, activities and idea about anything in the environment. Teo (2014) classifies attitude to be of different dimensions that are related to usefulness, confidence, anxiety and liking.

English language occupies a unique place in Nigerian education because of its significant role and status in national life, as it remains the official language of business and vital link between the various ethnic groups in the country. With the breaking of corona virus, the mode of instruction changed from conventional way of teaching to the virtual mode of instruction. Virtual teaching in secondary schools is an innovative means that influence the educational system partially replacing the familiar face to face technique of knowledge and skill acquisition and delivery. Education is not limited to the physical classroom anymore because technology (computer, internet etc.) is now offering education to learners residing anywhere in the globe. Despite the importance attached to virtual teaching in secondary schools, there are many challenges which have not made it to produce the desired results. As a way of addressing this problem, scholars and researchers have carried out numerous studies on virtual teaching and challenges facing the use of virtual teaching in secondary schools. All these studies came up with good insights to the teaching and learning of English Language in secondary schools but with less research focus on students' attitude to virtual teaching of English Language: Implications for students' achievement. Therefore this study investigated students' attitude to virtual teaching of English Language: Implications for students' achievement.

#### RESEARCH METHOD

This research uses quantitative methods and this study investigated students' attitude to virtual teaching of English Language: Implications for students' achievement. The study adopted the survey research design. Three private secondary schools were randomly selected from private secondary schools in Ibadan North Local Government Area, Oyo State. From each school, 50 SSII students were randomly selected making a total of 150 students. One research instruments was used for data collection: Questionnaire on Students' Attitude to Virtual Teaching (r=0.82). Data collected were analysed using descriptive statistics of percentage, mean, standard deviation and inferential statistics of t-test.

#### **RESULTS AND DISCUSSION**

This study revealed students' attitude to virtual teaching of English Language: Implications for students' achievement. Through the findings of this study, educational stakeholders would be guided on identifying and working on factors that could enhance effective teaching in seondary schools. It revealed the strengths and weaknesses of teaching virtually in secondary schools. Also, the study had added to the pool of research on virtual teaching of English Language in secondary schools.

# **RESULTS Research Questions 1:**

Tabel 1 Responses on Students' Attitude to Virtual Teaching Questionnaire

S/N	Items	SA	A	D	SD	M	Sd
1	Virtual teaching enhances my	19	51	63	17	141	
1	performance in English language	12.7	34.0	42.0	11.3	2.48	.857
	examinations	12.7	34.0	72.0	11.5	2.40	.037
2	The use of virtual teaching	19	48	67	16		
2	discourages me from attending the	12.7	32.0	44.7	10.7	2.47	.849
	English language classroom	12.7	32.0	44.7	10.7	2.47	.047
3	I like the use of virtual teaching	24	50	55	21		
3	because it makes me learn faster	16.0	33.3	36.7	14.0	2.51	.925
4	I dislike the use of virtual teaching	26	50	58	16		
7	because it makes me lazy.	17.3	33.3	38.7	10.7	2.57	.900
5	I like the use of virtual teaching	20	59.5	57.	10.7		
3	because it increases my readiness to	13.3	39.3	38.0	9.3	2.57	.839
	learn English Language	13.3	39.3	36.0	9.3	2.37	.039
6	I hate the use of virtual teaching	17	47	72	14		
U	because it is difficult to use it in	11.3	31.3	48.0	9.3	2.45	.815
	teaching English Language	11.3	31.3	46.0	9.3	2.43	.013
7	Virtual teaching in English Language	18	52	66	14		
,	instruction does not make me ready to	12	34.7	44	9.3	2.49	.825
	learn.	1,2	34.7	44	9.3	2.43	.023
8	Virtual teaching does not make me	9	31	79	31		
O	pass examinations.	6.0	20.7	52.7	20.7	2.12	.802
9	Virtual teaching mode of teaching	31	63	46	10		
,	English Language can be a boring	20.7	42.0	30.7	6.7	2.77	.855
	activity.	20.7	42.0	30.7	0.7	2.11	.033
10	Virtual teaching negatively affects my	13	32	76	24		
10	performance in English Language.	8.7	24.7	50.7	16.0	2.26	.831
11	Virtual teaching does not give me the	25	54	55	16.0		
11	opportunity to express myself	16.7	36.0	36.7	10.7	2.59	.891
12	Virtual teaching makes the teaching of	19.7	34	76	21		
12	English language difficult.	12.7	22.7	50.7	14.0	2.34	.873
13	The use of virtual teaching makes me	14	60	56	20		
13	like English Language.	9.3	40.0	37.3	13.3	2.45	.840
14	Virtual teaching does not give me	25	41	64	20		
1-7	opportunity to learn the four language	16.7	27.3	42.7	13.3	2.47	.925
	skills	10.7	27.5	72.7	13.3	2.47	.723
15	I find virtual teaching beneficial in	17	67	56	10		
13	teaching and learning of English	11.3	44.4	37.3	6.7	2.61	.776
	language.	11.5	1 r. <del>-</del> T	57.5	0.7	2.01	.,,0
16	Virtual teaching makes me find	16	39	79	16	_	
10	learning of English language difficult	10.7	26.0	52.7	10.7	2.37	.814
17	Network connectivity makes virtual	46	68	28	8		
1 /	teaching of English language to be	30.5	45.3	18.7	5.3	3.01	.843
	touching of English language to be	50.5	73.3	10.7	5.5		

S/N	Items	SA	A	D	SD	M	Sd	
	complicated							
18	Virtual teaching makes me to	19	61	56	14	2.57	.831	
	collaborate with my mates	12.7	40.7	37.3	9.3	2.57		
19	I hate virtual teaching of English	23	44	63	20	2.47	.910	
	language	15.3	29.3	42.0	13.3	2.47		
20	I am encouraged to learn the English		46	66	20	2 41	0.00	
	language virtually	12.0	30.7	44.0	13.3	2.41 .868		
Weig	Weighted Mean: 2.49 Threshold: 2.50							

Table 1 reveals the responses of students' attitude to virtual teaching. It reveals the weighted mean of 2.499 out of the 4.00 maximum obtainable scores, which is higher than the standard mean of 2.50. This means that students had a good attitude to virtual teaching.

Tabel 2. Difference between male and female students' attitude to virtual teaching

Group	N	Mean	Standard Deviation	Mean Difference	T	df	p-value	Remarks
Male	46	51.5652	2.72969	.21906	.414	148	.680	Not sig.
Female	104	51.3462	3.09641	_				

Table 2 shows the difference between male and female students' attitude to virtual teaching using the independent samples t-test analysis. The result indicates that there was no significant difference between male and female students' attitude to virtual teaching (t = .414; df=148; p>0.05). This implies that gender did not cause a variance in the students' attitude to virtual teaching.

### **Discussion Of Findings**

The results in Table 1 indicate that students have a positive attitude toward virtual learning. This positive attitude can be understood through the Technology Acceptance Model (TAM) developed by Davis (1989), which explains that technology acceptance is influenced by perceived usefulness and perceived ease of use. In this context, students may perceive virtual learning as a more flexible method that allows them to access materials anytime and anywhere while reducing the spatial and temporal limitations of conventional learning. These advantages align with the findings of Means et al. (2013), who stated that online learning can enhance learning effectiveness when designed interactively and when it allows students to manage their learning experience independently.

Additionally, Self-Determination Theory, proposed by Deci & Ryan (2012), helps explain how virtual learning enhances students' intrinsic motivation. In online learning systems, students have greater control over their learning pace and methods, contributing to a higher sense of competence and engagement in the learning process. Awareness of the importance of digital literacy in academic and professional settings may also be a driving factor in students' openness to technology-based learning. Okeke's (2021) study supports these findings, reporting that students have a positive attitude toward virtual learning in the context of English language education.

However, these findings contradict those of Eriemiokhale & Idiedo (2020), who reported that students had a negative attitude toward virtual learning. This discrepancy may be attributed to several factors, including technological readiness, prior experience with online learning systems, and educational policies implemented at the institutions where the studies were conducted. Based on the E-learning Readiness theory developed by Chapnick (Coopasami et al., 2017), technical and psychological readiness are crucial elements in determining the effectiveness of online learning. Students who are more accustomed to using digital technology will adapt more easily to this learning system than those with limited experience. This aligns with Prensky's (2001) Digital Natives vs. Digital Immigrants theory, which suggests that students who have been exposed to technology from an early age are more likely to accept and adopt digital-based learning methods.

Meanwhile, the findings from Table 2 indicate that there is no significant difference in students' attitudes toward virtual learning based on gender. This suggests that gender does not influence students' acceptance of online learning. These findings are consistent with Okeke's (2021) study, which also reported no significant differences between male and female students' attitudes toward technology-based learning. This phenomenon can be explained by Hyde's (2005) Gender Similarities Hypothesis, which posits that cognitive and attitudinal differences between males and females in education are often exaggerated. In recent years, increasing access to technology and digital literacy among students has reduced gender disparities in the acceptance and use of educational technology.

However, these findings contrast with those of Bahar & Asil (2018), who found significant differences in attitudes toward virtual learning based on gender. Their study reported that male students were more inclined to use technology for academic purposes compared to female students. This discrepancy can be understood through the Gender-Based Cognitive Differences theory (C. L. Martin, 2012), which suggests that males and females may have different learning styles and preferences when using technology. However, this trend is evolving as more women become engaged in technology and science.

These findings have significant implications for the implementation of virtual learning. Since students' attitudes toward online learning depend heavily on technological readiness and digital experience, educational institutions must ensure that all students have adequate access to the necessary devices and networks that support online learning. Additionally, instructional design should consider Cognitive Load Theory, developed by Sweller (1994), which emphasizes the importance of presenting information in a way that does not overload students' cognitive capacity, allowing them to process and understand concepts more effectively. Enhancing digital literacy is also crucial to ensuring that students possess the necessary skills to maximize the benefits of online learning.

Overall, this study indicates that students have a positive attitude toward virtual learning, with no significant differences based on gender. This positive perception can be explained through technology acceptance and intrinsic motivation theories, as well as the increasing awareness of the benefits of technology in education. However, the success of online learning remains dependent on technological readiness, students' prior experience with digital learning systems, and the instructional design employed. Therefore, strengthening digital infrastructure, developing adaptive learning methods, and enhancing students' digital skills are essential steps in optimizing the implementation of virtual learning in the future.

#### **CONCLUSION**

The study has shown that students had good attitude to virtual teaching of English Language. Based on this finding, the study has provided a better understanding of students' attitude to virtual teaching of English Language. Teachers and students should be trained on how to use online platforms for teaching and learning of English Language. Government should ensure that there is constant power supply and they should provide necessary facilities that can enhance virtual teaching and learning of English Language.

#### REFERENCES

- Akeredolu-Ale and Alimi, M. . (2012). Linguistic dilemma of second language learners Implications for English language teaching. *Research in African Languages and Linguistics (RALL)* 6, 67-80.
- Bahar, M., & Asil, M. (2018). Attitude towards e-assessment: Influence of gender, computer usage and level of education. *Open Learning: The Journal of Open, Distance and e-Learning*, 33(3), 221–237. https://doi.org/10.1080/02680513.2018.1503529
- Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J. J., & Ciganek, A. P. (2012). Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education*, 58(2), 843–855.

- Coopasami, M., Knight, S., & Pete, M. (2017). e-Learning readiness amongst nursing students at the Durban University of Technology. *Health SA Gesondheid*, 22, 300–306. https://doi.org/10.1016/j.hsag.2017.04.003
- Danladi, S. S. (2013). Language policy: Nigeria and the role of English language in the 21st century. *European Scientific Journal*, 9(17).
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. *Handbook of Theories of Social Psychology*, *I*(20), 416–436.
- Ekesionye, N. E., & Okolo, A. N. (2011). Optimizing E-Iearning Opportunities: A Effective and Necessary Tool Towards-Branding Higher Education in Nigerian Society in Onyegegbu, N. and Eze, U.(eds) Optimizing elearning Opportunities for Effective Education Service Delivery. *Publication of Institute of Education (UNN)*.
- Eriemiokhale, K. A., & Idiedo, V. (2020). Perceptions and attitude of students toward e-learning in Kwara State University. *Journal of Education and Practice*, 2, 31.
- Ezeokoli, F. . (2005). Home language as determinant of reading interest of senior secondary students in Oyo State, Nigera in Dada Abimbade and Kolawole O.O (ed.). Issues in language, communication and education: A book of reading. Ibadan: Counstellation books.
- Ghirardini, B. (2011). *E-learning methodologies: A guide for designing and developing e-learning courses*. Food and Agriculture Organization of the United Nations.
- Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist*, 60(6), 581–592.
- Jarmon, L. (2010). Homo virtualis: Virtual worlds, learning, and an ecology of embodied interaction. *International Journal of Virtual and Personal Learning Environments (IJVPLE)*, 1(1), 38–56.
- Jonassen, D. H. (2000). Revisiting activity theory as a framework for designing student-centered learning environments. *Theoretical Foundations of Learning Environments*, 89, 121.
- Kaur, S. (2020). The coronavirus pandemic in Malaysia: A commentary. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(5), 482.
- Keziah, A. A. (2012). Using computer in science class: The interactive effect of gender. *Journal of African Studies and Development*, *3*(7), 131.
- Lengzakka, S. (2006). Attitude formation. London: Thompson Books.
- Lokie, J. M. (2011). Examining student achievement and motivation using internet-based inquiry in the classroom.
- Martin, C. L. (2012). Cognitive theories of gender development. In *The developmental social psychology of gender* (pp. 91–121). Psychology Press.
- Martin, S., & Vallance, M. (2008). The impact of synchronous inter-networked teacher training in Information and Communication Technology integration. *Computers & Education*, 51(1), 34–53.
- Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. *Teachers College Record: The Voice of Scholarship in Education*, 115(3), 1–47. https://doi.org/10.1177/016146811311500307
- Mkpa, M. A. (2001). Education and National Development. Owerri: White & White Publishers.
- Nwokike, F. (2011). Optimizing e-learning for effective delivery of business education in tertiary institutions in the 21st century. In N. Onyegegbu & U. Eze (Eds), Optimizing e-learning opportunities for effective eductaion service delivery. *University of Nigeria Nsukka: Institute of Education*.

Obodo, G. C. (2002). Developing positive attitude and interest of mathematics students in Nigeria

secondary schools. Unpublished Paper Presented at Mathematical Science Summit Held at the National Mathematical Centre, Abuja, 4th-5th October.

- Ogunsiji, A. (2004). Developing the basic language skills for communicative competence in learners of English as a second language in Nigeria. *Ibadan Journal of English Studies*, 1, 19–34.
- Okeke, G. (2021). Students' perception of and attitude to online teaching during COVID 19 lockdown: Implications for students' achievement in English grammar. A Paper Presented at the Conference of School of Education, Federal College of Education (Special), Oyo.
- Owolewa, O. (2000). An investigation into the problem of writing English language composition in Senior Secondary Schools in Ondo State, Nigeria". *M.ED. Project. Department of Teacher Education. University of Ibadan. P4*.
- Pelet, J.-E., & Lecat, B. (2012). Virtual Worlds as the Next Asset of Virtual Learning Environments for Students in Business? *International Journal of Virtual and Personal Learning Environments* (*IJVPLE*), 3(2), 59–76.
- Piccoli, G., Ahmad, R., & Ives, B. (2001). Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in basic IT skills training. *MIS Quarterly*, 401–426.
- Prensky, M. (2001). Digital natives, digital immigrants part 2: Do they really think differently? *On the Horizon*, 9(6), 1–6. https://doi.org/10.1108/10748120110424843
- Sarker, M. F. H., Al Mahmud, R., Islam, M. S., & Islam, M. K. (2019). Use of e-learning at higher educational institutions in Bangladesh: Opportunities and challenges. *Journal of Applied Research in Higher Education*.
- Schutt, S., & Linegar, D. (2013). We learn as we go: What five years playing with virtual worlds has taught us. *International Journal of Virtual and Personal Learning Environments (IJVPLE)*, 4(2), 124–136.
- Siragusa, L., & Dixon, K. (2008). Planned behaviour: Student attitudes towards the use of ICT interactions in higher education. *Hello! Where Are You in the Landscape of Educational Technology? Proceedings Ascilite Melbourne* 2008, 942–953.
- Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4), 295–312. https://doi.org/10.1016/0959-4752(94)90003-5
- Teo, T. (2014). Preservice teachers' satisfaction with e-learning. *Social Behavior and Personality: An International Journal*, 42(1), 3–6.
- Vallance, M., Martin, S., Wiz, C., & Van Schaik, P. (2012). Designing effective spaces, tasks and metrics for communication in Second Life within the context of programming LEGO NXT Mindstorms<sup>TM</sup> robots. In *Design, Implementation, and Evaluation of Virtual Learning Environments* (pp. 42–57). IGI Global.
- Warschauer, M. (1998). *Electronic literacies: Language, culture, and power in online education*. Routledge.
- Wells, P., De Lange, P., & Fieger, P. (2008). Integrating a virtual learning environment into a second-year accounting course: determinants of overall student perception. *Accounting & Finance*, 48(3), 503–518.