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CHARTING THE COURSE: EXPLORING THE FUTURE OF ONLINE EDUCATION MANAGEMENT AND EFFICIENCY IN MAURITIUS' SECONDARY SCHOOLS

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Abstract

This conceptual study examines the challenges faced by secondary school educators in Mauritius in adopting online classrooms, particularly after COVID-19. It evaluates online education as a tool for enhancing education quality, focusing on gender, ICT infrastructure, and educators' technological and pedagogical knowledge. Through qualitative research, specifically in-depth interviews, the study explores educators' experiences and perceptions. The conceptual analysis suggests that gender may influence educators' attitudes toward technology, with female educators potentially facing more challenges. The availability of robust ICT infrastructure and technical support is crucial for educators' readiness to adopt online teaching. Additionally, educators' knowledge of technology and its pedagogical use is key to successfully integrating online learning. These conceptual insights are intended to guide future research and policy decisions, highlighting the need for targeted professional development and strategic investments in ICT to support online education adoption in Mauritius. Future research should include empirical data and expand to other regions and educational levels for a broader understanding of online education adoption.

Key Words:
Gender, ICT Infrastructure, Mauritius, Secondary Schools

1.Introduction

As the coronavirus disease 2019 (COVID-19) swept across the world upsetting established practices in all spheres and forcing people to battle situations never before anticipated, school leaders were compelled to spontaneously review and reinvent their leadership styles within new paradigms in response to the situation. For the first confinement period, all educational institutions, including secondary schools in Mauritius remained closed for approximately three and a half months, from 19th March to 30th June 2020. Following the temporary secondary schools' closure, policy decisions regarding alternative modalities, e.g., shifting to online teaching for Grades 10 to 13 and the broadcast of educational programmes on national television for Grades 1 to 9, were enforced by the Ministry of Education and Human Resources, Tertiary Education and Scientific Research (henceforth MoE).

The Education Act was amended to render distance education compulsory during temporary closure. And on 15th May 2020 –it became effective, with the adoption of the COVID-19 (Miscellaneous Provisions) Act (Republic of Mauritius 2020). Online education made educators and schools find innovative teaching methods to provide assistance to students during theis situation and technology played a crucial role to connect educators and students through latest and applications such as google classroom, zoom, and internet networks to adopt the online learning process more. It was indeed sudden transitions from the traditional face-to-face mode of course delivery to online model.

While the national education system in Mauritius underwent a swift transition, the decision to shift to online teaching was driven by the imperative to maintain the continuity of the school calendar. Recognizing the diverse landscape, the MoE responded to the challenges with adaptability. Unexpected challenges emerged, including some resistance from teachers and concerns voiced by certain teacher unions, underscoring the importance of addressing potential obstacles and fostering collaboration. Additionally, the varying facilities available to learners at home due to differences in socio-economic status necessitate a nuanced approach to ensure equitable access.

Examining the global landscape, including technologically advanced contexts such as the United Kingdom (UK), reveals commonalities in the face of a digital divide. Harris and Jones (2020) highlight the UK's digital disparities, reflecting similar challenges in Mauritius. Ngogi et al., (2020) reinforces the universality of these issues, emphasizing the need for

comprehensive solutions tailored to local contexts. In Mauritius, as in many underdeveloped areas, limited internet access was a prevalent challenge, contributing to a first-level digital divide among teachers. Tang and Bao (2020) study further discuss the second-level digital divide, emphasizing the importance of digital literacy skills. It is noteworthy that, in response to these challenges, courses were also delivered via television, reflecting the adaptability of educational strategies in Mauritius and maximizing the potential impact of online and televised education on teaching and learning outcomes.

This abrupt transition prompted school leaders to make critical managerial decisions, orchestrating the shift to online teaching, allocating resources effectively, and coordinating efforts to ensure a smooth educational transition. The MoE demonstrated adaptability, addressing resistance from teachers and collaborating to overcome managerial challenges, reflecting the resilience and strategic decision-making of educational managers.

Following the COVID-19 pandemic, students worldwide have reported that our students have undergone radical changes, challenging the traditional educational system. Today's learners are distinctly different from those for whom the system was originally designed. Acknowledging this shift, the Government of Mauritius, in collaboration with the Mauritius Institute of Education and the Private Secondary Schools Authority (PSSA), is actively working to reshape the education system, aligning it with the demands of this new era of teaching and learning.

This pursuit of change is not unique to Mauritius. In the wake of the global pandemic, educators, students, parents, and various stakeholders worldwide have embraced the concept and challenge of online education, recognizing the transformative potential of technology in the field of education. In Mauritius, where the government aims to transform the nation into a cyber-island, integrating information and communication technologies (ICTs) at all levels becomes a strategic objective. This integration requires the formulation of policies that align the education system with contemporary trends and practices.

Amidst this landscape of change and adaptation, this study aimed at exploring the challenges faced by educators in adopting online classrooms at the secondary level. The central research problem is to evaluate the adoption of online education as an adaptive tool in the 21st century, surpassing traditional classroom methods. This evaluation seeks to provide effective guidance and enhance the quality of education for students in the secondary sector of Mauritius. By addressing these challenges, this study attempts to contribute meaningful insights to the ongoing dialogue about the future of education in our dynamically evolving world, and particularly in Mauritius.

While the global discussion on online teaching surged during the onset of the COVID-19 pandemic, it's crucial to note that this debate predates the crisis. Research findings from case studies of specialized higher education institutions, insights from the academic community across continents (Bao 2020; Rumbley 2020), global webinars (Weissman 2020), and reports from international organizations have extensively explored emergency online teaching across various regions.

However, a noticeable gap exists in the research landscape, particularly concerning the preparedness of secondary school education in Small Island Developing States (SIDS) post-COVID-19, viewed from the perspective of local educators. To bridge this gap, this study undertook a conceptual study with a specific focus on the preparedness of educators for the future transition to the adoption of online teaching and learning in secondary schools in Mauritius.

This study aims to investigate whether the adoption of online modes in teaching and learning processes could contribute to maintaining a high-quality education, sustaining a viable education model. The investigation takes into account factors such as the gender of educators, the school climate, and the educators' knowledge of technology and pedagogical use of technology. By investigating these aspects, the goal of this study is to contribute valuable insights into the preparedness of secondary school educators in Mauritius for the evolving landscape of online education, addressing not only the immediate challenges but also the long-term sustainability and effectiveness of this educational model.

Within this conceptual framework, this study meticulously unravels the intricate relationships among the central concepts of interest, placing specific emphasis on the following objectives:

- To conceptually explore how gender influences educators' adoption of online teaching and learning.
- To conceptually examine the influence of ICT infrastructure on educators' adoption of online teaching and learning.
- To conceptually investigate how knowledge of technology and pedagogical use of technology shape educators' adoption of online teaching and learning.

This study aims to provide a theoretical foundation and understanding of the direct interrelationships between gender, ICT Infrastructure and knowledge of technology and pedagogical use of technology within the context of adoption of online teaching and learning

in secondary schools in Mauritius. By illuminating these concepts, it opens conceptual pathways for future exploration in this evolving field.

2. Literature Review

In the educational literature, numerous theoretical models have been developed to explore the acceptance of technology. Davis (1989) introduced the seminal Technology Acceptance Model (TAM), focusing on users' intentions to adopt technology. TAM identifies perceived usefulness and perceived ease of use as two primary determinants of technology acceptance. These intrinsic factors have been found applicable in the education sector, as noted by Cheung and Vogel (2013) and Schoonenboom (2014). Higgins and Moseley (2001) emphasized the role of educators' constructivist beliefs in determining their readiness to adopt technology in teaching and learning. According to Ertmer et al., (2006), intrinsic factors such as commitment, beliefs, and confidence hold greater significance than extrinsic factors like technology accessibility and time constraints in the adoption process.

Another influential model in technology acceptance is the Unified Theory of Acceptance and Use of Technology (UTAUT). Developed by Venkatesh et al., (2003), UTAUT consolidates constructs from eight earlier models, including the theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of personal computer use, diffusion of innovations theory, and social cognitive theory. UTAUT posits that performance expectancy, effort expectancy, social influence, and facilitating conditions are direct determinants of usage intention and behavior.

2.1 Gender

The influence of gender on the adoption of online teaching and learning is intricately connected to the broader societal dynamics, particularly in the domain of science, engineering, and technology (SET). Walby (2011) noted that while women excel in acquiring general forms of human capital through formal education, they encounter challenges in obtaining specific technical skills crucial to SET fields. The gendered composition of SET, as outlined by Walby, is reflective of the broader gendered culture within science and technology, contributing to the under-representation of women in these domains.

Galyani Moghaddamp's (2009) findings emphasized women's self-perceived lower confidence and capabilities in using computing equipment. Women reported feeling less experienced than male counterparts in IT-related skills and held generally negative attitudes towards the importance and relevance of IT to academic studies and future careers. This

negative perception is further reinforced by perceived obstacles within the educational system that hinder women from acquiring ICT skills (Caprile and Pascual, 2011).

Gender disparities in computer integration within educational institutions are highlighted by Sanget al., (2010). Kay (2007) observed that males tend to exhibit more positive attitudes and higher abilities towards computer use. Markauskaite's findings, as cited in Galyani Moghaddamp (2009), underscored significant differences between males and females in technical ICT skills.

The view of ICT as a socially constructed entity, not gender-neutral, contribute to a global gender gap in accessing and using ICT (Galyani Moghaddamp, 2009). Socio-cultural beliefs play a pivotal role in creating gender bias, influencing the relationship between gender and ICT. Proposition 1 emerges from these observations:

Proposition 1: Gender Positively Influences the Adoption of Online Teaching and Learning.

This proposition sums up the complex interplay between gender dynamics, socio-cultural beliefs, and attitudes towards technology, suggesting a potential positive relationship between gender and the adoption of online teaching and learning. Further exploration and analysis will provide a deeper understanding of the nuances within this relationship in the context of secondary education in Mauritius.

2.2 Social Climate/ School Climate: Influence of ICT Infrastructure

The successful implementation of digital programs in educational settings is intricately linked to the school's vision for technology integration (Pelgrum and Law, 2003). The role of the social climate, particularly the institutional support provided to educators, has been emphasized in fostering motivation for the use of digital tools (Veen, 1993). This support encompasses various dimensions, including technical support, accessibility to ICT infrastructure, instructional support, and the availability of updated hardware and software (Gulbahar, 2007; Richardson, 2009).

Educators' perceptions regarding the school's technical support, the accessibility of ICT infrastructure, and the availability of updated hardware and software have been identified as critical determinants for the adoption of ICT in education (Gulbahar, 2007; Richardson et al., 2009). The more robust and supportive the social climate, the more likely educators are to embrace digital tools in their teaching practices.

Studies have consistently highlighted the significance of organizational support, training development programs, and effective leadership in fostering the adoption of ICT in educational institutions (Braak, 2001; Butler and Sellbom, 2002; Fabry and Higgs, 1997; Norris et al., 2003). These elements contribute to creating a conducive environment where educators

feel empowered and equipped to integrate technology effectively into their teaching methodologies.

Beyond institutional and organizational support, cooperation from educators, administration, and technical staff has been identified as key factors predicting the effective use of ICT in schools (Dexter & Riedel, 2003; Bullock, 2004). Collaborative efforts and positive relationships within the educational community play a vital role in shaping the overall social climate and influencing the successful adoption of ICT.

Proposition 2: ICT Infrastructure has a Positive Influence on the Adoption of Online Teaching and Learning

Drawing from the existing literature, Proposition 2 posits that ICT infrastructure, encompassing technical support, accessibility, and the availability of updated hardware and software, exerts a positive influence on the adoption of online teaching and learning. This implies that a supportive and well-equipped technological environment within educational institutions enhances educators' readiness to engage with digital tools for instructional purposes.

2.3 Knowledge of Technology and Pedagogical use of Technology

Several studies (Blackwell et al., 2014; Ertmer, et al., 2012; Inan & Lowther, 2010; Ottenbreit-Leftwich, et al., 2010) highlight the recurring issue of inadequate technology skills among educators when it comes to the use of technology in online classrooms. According to Hew and Brush (2007), a primary barrier hindering educators' utilization of technology is the lack of specific technology knowledge and skills, technology-supported pedagogical knowledge and skills, and technology-related management knowledge and skills.

In a study focusing on secondary school teachers' attitudes towards Web 2.0 technologies, Kale and Goh (2014) reported difficulties faced by teachers in integrating the use of Web 2.0 applications in their teaching. Despite familiarity with these applications, teachers encountered obstacles due to a lack of clear ideas on how to effectively use them to support student learning.

Similar challenges were found by Archambault and Crippen (2009) in their study involving 596 teachers in America. The results indicated that while teachers demonstrated high levels of pedagogical and subject area knowledge, their technology knowledge remained comparatively low. In China, Zhou et al., (2011) observed that in-service teachers exhibited low use of technology in teaching due to a lack of necessary skills for technology integration. Lindberg et al., (2017), in a study on ICT use for teaching and learning in Swedish upper secondary schools, noted that despite advanced technology skills, teachers often struggled to keep pace with the rapid development of technology.

Proposition 3: Knowledge of Technology and Pedagogical use Positively Influences Adoption of Online Teaching and Learning.

Drawing from the challenges highlighted in the literature, Proposition 3 asserts that educators' knowledge of technology and its pedagogical use exerts a positive influence on the adoption of online teaching and learning. This proposition underscores the crucial role of educators' technological competence and their ability to effectively integrate technology into pedagogical practices in facilitating the adoption of online teaching methods.

3.Methodology

The study aims to conceptually explore the challenges and factors influencing the adoption of online teaching and learning in secondary schools in Mauritius, with a particular focus on gender, ICT infrastructure, and educators' pedagogical use of technology. Given the exploratory nature of the research, a qualitative methodology is most appropriate, allowing for a deep understanding of the lived experiences, perceptions, and attitudes of educators within their specific cultural and educational contexts.

A qualitative research design will be employed to investigate the three key objectives of the study. The design will focus on gathering rich, detailed data from secondary school educators through in-depth interviews. This approach is particularly effective in exploring complex, context-dependent phenomena such as the influence of gender, ICT infrastructure, and pedagogical use of technology on the adoption of online education.

In-depth interviews will be the primary method for data collection. This method is chosen for its ability to provide comprehensive insights into the participants' experiences, attitudes, and perceptions. The interviews will be semi-structured, allowing the researcher to explore specific areas related to the research objectives while also giving participants the freedom to express their thoughts and experiences in their own words.

A purposive sampling strategy will be employed to select participants who are most likely to provide rich and relevant data related to the research objectives. The target population will consist of secondary school educators in Mauritius. Participants will be selected based on criteria such as gender, experience with online teaching, and access to ICT infrastructure. This approach ensures that the sample is diverse and representative of the different perspectives and experiences within the population.

The sample size will be determined by the principle of data saturation, which is reached when no new themes or insights emerge from the interviews. Based on the scope of

the study and the expected diversity of experiences, it is anticipated that interviews with 20-30 educators will be sufficient to achieve data saturation.

3.1 Objective 1 – Gender

The study focuses on secondary schools in Mauritius, and qualitative methods are particularly effective in capturing the unique cultural and contextual factors that may influence the relationship between gender and technology adoption. Participants can share their experiences within the specific educational and cultural context.

Qualitative methods allow for an in-depth exploration of educators' experiences, perceptions, and attitudes regarding the influence of gender on the adoption of online teaching and learning. Through open-ended interviews, participants can express their views in their own words, providing rich and detailed insights. The influence of gender on educators' adoption of online teaching and learning is likely to be subjective and context-dependent. Qualitative methods are well-suited for capturing the diverse and nuanced perspectives of educators, allowing for a holistic understanding of this complex phenomenon.

The interview questions will cover topics such as:

- Educators' confidence in using technology for online teaching.
- Perceived barriers or challenges related to gender in adopting online teaching methods.
- Support systems and resources available to male and female educators for technology adoption.
- Educators' views on the impact of gender on student engagement and learning outcomes in online environments.

This objective aims to capture the subjective and context-dependent nature of gender-related experiences in technology adoption, providing insights into how gender dynamics influence the integration of online teaching and learning in secondary schools.

3.2 Objective 2 - ICT Infrastructure

The qualitative approach is chosen to gain a comprehensive understanding of educators' experiences and perceptions related to ICT infrastructure and its influence on their readiness to adopt online teaching methods. This approach allows for a detailed exploration of educators' experiences, attitudes, and challenges in integrating online teaching tools within the context of available ICT infrastructure. The target population would consist of educators in secondary schools in Mauritius. In-depth interviews will be conducted with educators to gather insights into the impact of ICT infrastructure on their adoption of online teaching and learning.

The interviews will explore the following areas:

- Educators' access to and familiarity with ICT tools and resources.
- The adequacy of ICT infrastructure in supporting online teaching (e.g., internet connectivity, availability of devices).
- Challenges faced by educators due to inadequate ICT infrastructure.
- The role of institutional support in enhancing ICT infrastructure for online teaching.

By examining these aspects, the study seeks to provide a comprehensive understanding of how ICT infrastructure impacts educators' ability to effectively implement online teaching and learning.

3.3 Objective 3 - Pedagogical use of Technology

A qualitative research design will thoroughly explore the impact of educators' knowledge of technology and pedagogical use of technology on the adoption of online teaching and learning in secondary schools in Mauritius. Utilizing in-depth interviews as the primary method for data collection, will allow educators to share their experiences, challenges, and perceptions in a detailed manner.

The interviews will delve into the following topics:

- Educators' understanding of effective online teaching practices and pedagogies.
- Experiences with integrating technology into their teaching methods.
- Perceived challenges in applying pedagogical knowledge to online teaching.
- The role of professional development and training in enhancing educators' pedagogical use of technology.

This objective aims to uncover the relationship between educators' pedagogical skills and their ability to adopt and implement online teaching methods effectively.

Table 1 – Summary of Interview Areas for Each of the Three Objectives

Objectives	Interview areas
Objective 1	Comfort and Familiarity; Gender and Technology Confidence; Experiences and Perspectives
Objective 2	Accessibility to ICT Infrastructure; Instructional Support; Availability of Updated Hardware and Software

Objective 3	Technology Knowledge; Pedagogical Use of Technology; Challenges Faced; Professional Development; Impact on Teaching and Learning; Strategies for Improvement; Collaboration and Peer Learning

The study will adhere to ethical guidelines to ensure the protection of participants' rights and well-being. Key ethical considerations will include iinformed consent whereby pparticipants will be fully informed about the purpose of the study, the nature of their involvement, and their right to withdraw at any time without penalty. Written consent will be obtained before the interviews and secondly cconfidentiality where pparticipants'' identities will be kept confidential, and all data will be anonymized to protect their privacy. All interview recordings, transcripts, and related data will be securely stored, and access will be restricted to the research team.

4. Discussions

The advent of online learning has revolutionized the educational landscape by offering unprecedented flexibility in terms of time and place. This flexibility is particularly beneficial in extending educational opportunities to remote areas and to individuals who may not have the luxury of attending traditional classes due to time constraints. The COVID-19 pandemic served as a significant test for the e-learning model, highlighting its potential as well as its limitations across different regions and educational systems.

Online learning may offer many advantages over traditional face-to-face teaching and training. The most significant ones are place and time independence. Both enable students to learn at any time of the day, anywhere they are, resulting in the spread of education to remote areas and societies with very little time for traditional education. We can be sure of one thing, however: the COVID-19 pandemic represented a genuine test for the e-learning formula, and different countries have coped to different degrees.

However, it must not be forgotten that one of the most significant advantages of full-time face to face study is constant, direct contact between the student and educator. It is challenging to replace this, even with the latest technology, and the practical knowledge that is fundamental to several professions cannot be replaced.

The educator, especially in the early stages of education, such as secondary school, is responsible for teaching children. Often, through direct contact with the student and observation of their behavior, a teacher can assess whether a child has problems, e.g., at home or with friends, and can react quickly. Furthermore, a child studying at secondary school has

contact with their peers, which significantly impacts their development. Moreover, online education cannot replace practical workshops, where manual skills are taught. However, it should be emphasized that, in situations where access to education is limited, e.g., by the COVID-19 pandemic, online learning provides a worthwhile alternative.

Managerially, it offers insights into how educational leaders can tailor strategies to address gender-specific challenges. For example, identifying and addressing gender biases in technology training programs and fostering an inclusive environment can be key managerial considerations. interview areas for each of the three objectives from a managerial perspective, this provides critical insights into resource allocation and infrastructure development. Educational leaders can use this information to strategically invest in technology infrastructure, ensuring educators have the necessary tools for effective online teaching. Managerially, this sheds light on the importance of professional development programs. Education leaders can use these findings to design targeted training initiatives, enhancing educators' technology and pedagogical skills for effective online teaching.

4.1. Limitations of the Study

Conducting a conceptual study on online learning in secondary schools can provide valuable insights into the theoretical aspects of the topic. However, it's important to be aware of the limitations that may arise in such studies. Here are some common limitations:

- Lack empirical data. Without real-world data, it can be challenging to validate or test the concepts in practical settings.
- A conceptual study may not fully capture the diverse perspectives of stakeholders involved in online learning in secondary schools, such as students, parents, and administrators. Understanding these perspectives is crucial for a comprehensive analysis of the topic.
- The study may not sufficiently explore the human elements of online learning, such as the social and emotional aspects of students and teachers. The impact of these factors on the effectiveness of online learning may be underestimated in a purely conceptual analysis.
- Without empirical evidence, it may be challenging to determine whether the proposed theoretical connections between gender, ICT Infrastructure and knowledge of technology and pedagogical use of technology on adoption of online teaching and learning in secondary schools are causal or merely correlational.

To overcome these limitations, researchers will consider complementing the conceptual study with empirical research, involving a mix of quantitative and qualitative methods, to provide a

more comprehensive understanding of the phenomenon of online teaching and learning in secondary schools in Mauritius.

REFERENCES:

Archambault, L. and Crippen, K., (2009). Examining TPACK among K-12 online distance educators in the United States. *Contemporary issues in technology and teacher education*, *9*(1), pp.71-88.

Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. Human Behavior and Emerging Technologies, 2(2), 113–115.

Blackwell, Courtney K., Alexis R. Lauricella, and Ellen Wartella. (2014). "Factors influencing digital technology use in early childhood education." *Computers & Education* 77: 82-90.

Bullock, D. (2004). Moving from theory to practice: An examination of the factors that preservice teachers encounter as the attempt to gain experience teaching with technology during field placement experiences. Journal of Technology and Teacher Education, 12(2), 211–237.

Butler, D.L. and Sellbom, M., (2002). Barriers to adopting technology. *Educause quarterly*, *2*(1), pp.22-28.

Caprile, M. and Pascual, A.S., (2011). The Move Towards the Knowledge-based Society: a Gender Approach. *Gender, Work & Organization*, *18*(1), pp.48-72.

Cheung, R. and Vogel, D., (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & education*, *63*, pp.160-175.

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

Dexter, S., & Riedel, E. (2003). Why improving preservice teacher educational technology preparation must go beyond the college's walls. Journal of Teacher Education, 54(4), 334–346.

Ertmer, P.A., Ottenbreit-Leftwich, A. and York, C.S., (2006). Exemplary technology-using teachers: Perceptions of factors influencing success. *Journal of computing in teacher education*, *23*(2), pp.55-61.

Ertmer, P.A., Ottenbreit-Leftwich, A.T., Sadik, O., Sendurur, E. and Sendurur, P., (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & education*, *59*(2), pp.423-435.

Fabry, D.L. and Higgs, J.R., (1997). Barriers to the effective use of technology in education: Current status. *Journal of educational computing research*, *17*(4), pp.385-395.

Gülbahar, Y., (2007). Technology planning: A roadmap to successful technology integration in schools. *Computers & education*, *49*(4), pp.943-956.

Harris, A. and Jones, M., (2020). COVID 19–school leadership in disruptive times. School leadership & management.

Hew, K.F. and Brush, T., (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational technology research and development*, *55*, pp.223-252.

Higgins, S. and Moseley, D., (2001). Teachers' thinking about information and communications technology and learning: Beliefs and outcomes. *Teacher development*, *5*(2), pp.191-210.

Huang, G.B., Zhou, H., Ding, X. and Zhang, R., (2011). Extreme learning machine for regression and multiclass classification. *IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics)*, *42*(2), pp.513-529.

Inan, F.A. and Lowther, D.L., (2010). Factors affecting technology integration in K-12 classrooms: A path model. *Educational technology research and development*, *58*, pp.137-154.

Kale, U. and Goh, D., (2014). Teaching style, ICT experience and teachers' attitudes toward teaching with Web 2.0. *Education and Information Technologies*, *19*, pp.41-60.

Kay, R.H., (2009). Examining gender differences in attitudes toward interactive classroom communications systems (ICCS). *Computers & education*, *52*(4), pp.730-740.

Li, D.U., Walker, R., Richardson, J., Rae, B., Buts, A., Renshaw, D. and Henderson, R., (2009). Hardware implementation and calibration of background noise for an integration-based fluorescence lifetime sensing algorithm. *JOSA A*, *26*(4), pp.804-814.

Lindberg, O.J., Olofsson, A.D. and Fransson, G., (2017). Same but different? An examination of Swedish upper secondary school teachers' and students' views and use of ICT in education. *The international journal of information and learning technology*, *34*(2), pp.122-132.

Ngugi, L.C., Abdelwahab, M. and Abo-Zahhad, M., (2020). Tomato leaf segmentation algorithms for mobile phone applications using deep learning. Computers and Electronics in Agriculture, 178, p.105788.

Norris, D., McQueen, J.M. and Cutler, A., (2003). Perceptual learning in speech. *Cognitive psychology*, *47*(2), pp.204-238.

Ottenbreit-Leftwich, A.T., Glazewski, K.D., Newby, T.J. and Ertmer, P.A., (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers & education*, *55*(3), pp.1321-1335.

Pelgrum, W.J. and Law, N.W.Y., (2003). *ICT in education around the world: Trends, problems and prospects*. UNESCO: International Institute for Educational Planning.

Rumbley, L. E. (2020). Coping with COVID-19: International higher education in Europe. Amsterdam: European Association for International Education (EAIE) Retrieved 7 April 2021 from https://www.eaie.org/our-resources/library/publication/Research-and-trends/Coping-with-COVID-19–International-higher-education-in-Europe.html.

Sang, G., Valcke, M., Van Braak, J. and Tondeur, J., (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education*, *54*(1), pp.103-112.

Schoonenboom, J., (2014). Using an adapted, task-level technology acceptance model to explain why instructors in higher education intend to use some learning management system tools more than others. *Computers & Education*, *71*, pp.247-256.

Tang, H. and Bao, Y., (2020). Social Justice and K-12 Teachers' Effective Use of OER: A Cross-Cultural Comparison by Nations. Journal of Interactive Media in Education, 2020(1).

Van Braak, J., (2001). Individual characteristics influencing teachers' class use of computers. *Journal of educational computing research*, *25*(2), pp.141-157.

Veen, W., (1993). The role of beliefs in the use of information technology: implications for teacher education, or teaching the right thing at the right time. *Journal of Information Technology for teacher education*, *2*(2), pp.139-153.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D., (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, pp.425-478.

Walby, S., (2011). Is the knowledge society gendered?. *Gender, Work & Organization*, *18*(1), pp.1-29.

Weissman, S. (2020). "Universities Face Digital Accessibility Lawsuits as Pandemic Continues." Diverse. 8 September 2020. https://diverseeducation.com/article/189682