

Exploring Strategies For Effective Self-Regulated Learning In Students' Use Of Online Learning For Quality Learning

Oluwatoyin Ayodele Ajani

Centre for Excellence in Teaching and Learning Durban University of Technology
Durban, South Africa.

Abstract

The emergence of COVID-19 globally has emphasised the significance of the Fourth Industrial Revolution in higher education. Due to necessity, several higher education institutions across the globe have continued to transform teaching and learning activities into online platforms. This research aims to ascertain and explicate the characteristics of internet-based educational platforms and advance the self-regulated learning (SRL) framework in online learning contexts to facilitate learning attainment in higher education through digital technologies during the post-COVID-19 pandemic. The study employs the self-regulated learning framework to facilitate students' ability to acquire independent learning skills. The framework highlights the significance of three distinct phases in fostering efficacious self-regulated learning among students who utilise online learning systems, namely planning, performing, and evaluating. Various existing online learning studies have identified several efficacious strategies for this phenomenon. Thus, this study identifies and describes the various strategies to fulfil students' needs in an online learning space. Strategies identified include students' self-awareness of their diverse online learning needs, the provision of pacing assistance, monitoring of student engagement, and stakeholder support. This study adds to the debate on how students can be appropriately aided in their pursuit of online learning. The study also provides valuable insights to lecturers or learning facilitators on how and why they can cultivate self-regulated learning (SRL) proficiencies among students, thereby optimising the efficacy of online pedagogy.

Keywords: support, Self-Regulated Learning skills, online learning, support, strategies.

Introduction

Numerous studies (Brennan, 2003; Leyer et al., 2023; Lin et al., 2023) have used empirical data to demonstrate the significance of e-learning. The real-world use cases mentioned (Dietinger, 2003; Ajani, 2022a, 2022b; Pangarso & Setyorini, 2023) demonstrate how this emerging field has become more critical for businesses and educational institutions. Despite the potential benefits of online learning, several challenges have yet to be identified in the literature (Ajani, 2022a). These include increased costs and political pressures (Noble, 2001; Pangarso & Setyorini, 2023), an overemphasis on technology at the expense of pedagogical principles (Park et al., 1987; Leyer et al., 2023), and usability issues at online learning systems.

Gunawardena and McIsaac (2004) and Alyoussef (2023) note that a transition from research focused on technology to research focused on pedagogy in online learning has been advanced. Recent times, especially post-COVID-19 experiences, show there has been a shift in the focus of lecturers towards scrutinising pedagogical themes and strategies employed in online learning, as opposed to engaging in exploratory activities with novel technologies.

The experiences of various educational institutions worldwide due to the coronavirus disease (COVID-19) pandemic have brought online learning to the forefront of discussion (UNESCO, 2020; Gamede et al., 2022). However, the Digital Learning Collaborative reported in 2019 that the adoption of fully online education in higher education environments had already surfaced earlier as a replacement for face-to-face classrooms in various nations worldwide. There have been concerns about higher education students' ability to persevere and achieve learning and academic success despite the prevalence of fully online learning opportunities, as highlighted by Ahn and McEachin (2017) and Freidhoff (2018). To achieve favourable student outcomes, it is imperative to contemplate instructional designs that generate learning prospects for every student. The discourse surrounding higher education online learning has been directed towards the objective of rendering educational content easily accessible to students (Rice, 2018; Alyoussef, 2023). In times of distressing situations, such as the COVID-19 pandemic, ensuring accessibility to online educational resources becomes increasingly crucial as students encounter emotional hindrances that impede their ability to concentrate on their studies.

Nevertheless, individuals who experience stress or pressure may encounter more significant challenges in exhibiting self-regulated behaviour. This study examines self-regulated approaches towards online learning, situated within motivational theories that can enhance personalised student control and decision-making and cognitive theories that propose structured content design as crucial for facilitating learning. Self-regulation of learning (SRL) in higher education in fully online learning environments is recommended to guide learning in this post-pandemic and the future.

Theoretical Frameworks for online learning

Implementing online learning platforms is a multifaceted procedure beyond the systematic execution of steps within an instructional design framework. According to McLeod (2003), lecturers should consider the principles of learning based on historically developed learning theories, among numerous other critical factors. It is possible to use particular strategies repeatedly, such as pre-established instructional components, as Merrill (2001) suggests. In online learning, three prominent learning theories, namely behaviourism, cognitivism, and constructivism, have been identified as significant by scholars such as Cooper (1993) and Dietinger (2003). These theories provide insights into the learning process and potential implications for implementing online learning.

Behaviourism

This behaviourist perspective was shaped by scholars such as Watson, Thorndike, Pavlov, and Skinner, as they posit that external environmental stimuli bring about alterations in observable behaviour. Skinner (1974) argues that behaviourists believe that the mind can be likened to a

"black box," whereby the response to a stimulus can be quantitatively observed without considering the cognitive processes occurring within the mind. Atkins (1993) further identifies four pertinent aspects for the implementation of online learning within the behaviourist paradigm:

-The pedagogical approach for presenting learning materials should involve breaking down learning procedures into smaller instructional steps and presenting them in a deductive manner. This involves commencing with a rule, category, principle, formula, or definition, followed by positive examples to reinforce comprehension and negative examples to establish conceptual boundaries.

-In the process of designing content for online learning, it is necessary for course designers to establish a series of instructions that involve both conditional and unconditional branching to other instructional units, as well as pre-determining choices within the course. Typically, activities are arranged in a sequence that progresses in terms of difficulty or complexity. The regulation of sequence and pacing within the educational materials is typically outside the student's control.

-To optimise the effectiveness of the learning process, students may be directed to skip or review specific sections based on their performance on diagnostic assessments or within the sequence of learning activities. However, the instructional designer can allow the student to select the subsequent instruction from a pre-determined pool of activities, thereby affording the student more outstanding agency in the learning experience.

Hence, the behaviouristic approach to learning entails demonstrating the desired operation, procedure, or skill, followed by a deconstruction of its components with suitable elucidation before the students replicate the targeted behaviour. Iterative practice with helpful feedback or regular review and revision are expected of students to improve their proficiency. The field of instructional design places significant emphasis on minimising error rates and incorporating remedial loops to revisit the material as needed. Moreover, the utilisation of reinforcement messages is recommended to sustain motivation.

In general, behaviourists advocate for a methodical and logical approach to developing an online course to facilitate the students' swift acquisition of fundamental concepts, skills, and factual knowledge. The concept of drill and practice, material segmentation, assessment of student achievement levels, and the provision of external feedback are significant implications of online learning. The efficacy of behavioural design methodologies in facilitating higher-order learning tasks or promoting the transfer of learning still needs to be verified.

Conversely, students are exposed to various learning experiences that can influence their behaviours to establish desired learning experiences. When learning is attained, students' academic performance is established and can be assessed for further improvement. Online learning provides students with various learning technologies that can be used to access learning from different learning platforms, which subsequently impact their learning or behaviours.

Cognitivism

According to Ally (2004), cognitivists view learning as an internal process encompassing various cognitive functions such as memory, thinking, reflection, abstraction, motivation, and metacognition. Cognitive psychology is concerned with the acquisition of knowledge through an information-processing framework. This involves the initial reception of information in the sensory store via various sensory modalities, followed by its subsequent transfer to short-term and long-term memory through a range of cognitive processes. Moreover, the cognitive perspective acknowledges the significance of unique variations among individuals and the necessity of incorporating diverse learning approaches to accommodate such differences. Students access or experience the learning process through various online platforms and cognitively process the received information to establish desired learning, which manifests in them. As Kolb (1984), Myers (1978), and others proposed, diverse learning styles pertain to how a student apprehends, engages with, and reacts to educational content. Furthermore, cognitive styles, as discussed in the work of Witkin et al. (1977), refer to how students process information, encompassing an individual's habitual approach to thinking, recalling, or resolving problems. Their self-regulated learning approaches influence this process.

In addition to Piaget's theory, Deubel (2003) asserts that the learning process encompasses socio-cultural perspectives that emphasise the socially and culturally embedded contexts of cognition, as established in Duffy and Cunningham (1996). Hence, to develop online learning content, instructional designers must consider the following factors:

- The pedagogical approach ought to optimise knowledge acquisition by engaging all sensory modalities, directing the student's concentration towards significant and crucial information, providing logical reasoning for each directive, and aligning the cognitive complexity of the instruction with the student's level of understanding.
- The instructional design process in online learning involves integrating new information with pre-existing knowledge from long-term memory. This can be achieved using advanced organisers, which activate existing cognitive structures and facilitate the incorporation of lesson details. Additionally, conceptual models can be provided to enable students to retrieve existing mental models. Pre-instructional questions can set expectations and activate students' existing knowledge structures, while prerequisite test questions can activate the knowledge structure necessary for new materials.
- The instructional material should be divided into manageable segments to avert cognitive overload. To facilitate effective learning, it is recommended to provide linear, hierarchical, or spider-shaped information maps when the number of items to be learned exceeds five to nine. Additionally, strategies that require students to apply, analyse, synthesise, and evaluate information should be employed to promote deep processing and higher-level learning.

Thus, it is recommended that online learning materials incorporate exercises that cater to diverse learning and cognitive styles. Moreover, it is imperative to furnish appropriate and tailored assistance to students with diverse learning styles. According

to Paivio's dual-coding theory (1990), presenting information in various modes is recommended to cater to individual differences in processing and enhance information transfer to long-term memory. To effectively motivate students to learn, it is crucial to use learning strategies that consider intrinsic motivation, which comes from within the student, and extrinsic motivation, which comes from the instructor or performance. As a result, the facilitator could use strategies like Keller and Suzuki's 1988 ARCS model, which stands for attention, relevance, confidence, and satisfaction.

According to Meyer's (1998) findings, an effective lecturer strategy should encourage students to utilise their meta-cognitive abilities by critically thinking about their learning, collaborating with peers, and monitoring their progress. Ultimately, the pedagogical approach should establish a correlation between the educational material and various practical scenarios, enabling students to relate to their encounters and, consequently, enhance their retention of information. Moreover, applying acquired knowledge to practical scenarios may facilitate the establishment of individual significance and contextual comprehension of the subject matter in students' engagements at various online learning platforms. In summary, cognitive psychology concerns how students receive and process information to transfer it into long-term memory for storage. Instructional designers must consider various factors, including but not limited to breaking down the learning material into smaller segments and accommodating diverse learning preferences, as well as more advanced concepts like motivation, collaboration, and meta-cognition (Ajani, 2021; Ajani, 2022b). Whilst the cognitive-focused approach may effectively achieve advanced learning outcomes, a significant limitation arises when a student needs more foundational knowledge. To address this matter, it is imperative for a course designer to ensure that the instructions are suitable for individuals with varying levels of skill and experience, a process that is evidently both resource-intensive and time-consuming.

Constructivism

According to McLeod (2003), the constructivist approach to learning posits that students generate individualised knowledge through their engagement with the learning process. Learning is a dynamic process whereby knowledge acquisition is not a passive reception from external sources or individuals. As per the findings of Duffy and Cunningham's study conducted in 1996, it is recommended that students be provided with various learning opportunities in online learning to construct knowledge on their own instead of solely relying on instructional methods for acquiring knowledge. Constructivists place much emphasis on situated learning, which believes that the context in which learning occurs has a significant impact. As a result, they advocate for strategies that promote multi-contextual learning, enabling students to apply acquired knowledge in a wide range of online learning situations. According to Boethel and Dimock's (1999) research, it can be inferred that learning theory operates under certain assumptions. Specifically, it posits that learning is an adaptive activity situated within the context in which it takes place. The acquisition of knowledge is a process that involves the active participation of the student, who may encounter obstacles in the form of resistance to change. Experiences and social interactions have an impact on the acquisition of knowledge. It is necessary to deduce the implications to formulate guidelines for online learning

Knowledge acquisition ought to be an engaged undertaking involving students in high-level activities. Encouragement of practical application of knowledge, facilitation of personal interpretation of learning material, participation in group discussions, and other similar activities can all help achieve this.

To facilitate the construction of knowledge by students, lecturers/facilitators must furnish adequate interactive online instructions. Since students must take the initiative to learn and interact with their peers and the facilitators, they are primarily responsible for directing the learning process (Murphy & Cifuentes, 2001; Carlos et al., 2023). In contrast to the conventional lecture format, where lecturers tailor and personalise information to suit their requirements, students are expected to engage with the learning material directly.

Hooper and Hannafin (1991) recommended collaborative and cooperative learning to advance constructivist learning. Collaborating with peers provides students with practical exposure and an opportunity to utilise and enhance their metacognitive abilities. When allocating individuals for a collaborative task, consider their proficiency level and preferred learning mode as the basis for group membership. This approach ensures team members can leverage each other's strengths to achieve optimal outcomes.

It is recommended that students be granted autonomy over the learning process and tasks. In addition, it is recommended to incorporate a structured approach to discovery-based learning, wherein students are empowered to determine their learning objectives while receiving appropriate support and guidance from the lecturers. Students must be afforded sufficient time and opportunities to engage in reflective practices when undertaking online learning. Incorporating embedded questions about the subject matter can promote introspection and cognitive assimilation of the material throughout the instructional session. To enhance the educational experience, providing students with concrete examples and practical applications that illustrate theoretical concepts is advisable. Moreover, educational activities must facilitate the students' application and personalisation of the provided learning material.

It is recommended that lecturers prioritise interactive learning activities to foster elevated levels of learning and social presence while also aiding in the cultivation of personal significance. Acquiring novel knowledge, abilities, and dispositions constitutes the primary objective of the learning process. However, online learning encounters challenges in achieving psychomotor, affective, and advanced cognitive goals during virtual instructional phases. According to Mödritscher and Sindler (2005) and Carlos et al. (2023), it is recommended to incorporate alternative methods, such as social or interactive activities, context-based learning, and open-ended question assessments, to implement these didactic aspects of online learning effectively.

Constructivist learning can be observed in experiential learning, self-regulated learning, context-aware learning, and reflective practice. Although constructivism offers several benefits, including providing diverse perspectives on content, active knowledge construction, and the development of meta-cognitive strategies, this learning theory also encounters several drawbacks. These include challenges in effectively assessing the learning process, insufficient

instructional resources to cater to the diverse interests of students, the increased effort required to create context-based learning content, limitations in directing the learning process towards specific objectives, such as those dictated by scientific principles, and a higher dropout rate due to a lack of extrinsic motivation for students who struggle with self-regulated learning.

The significance of the three widely recognised learning theories is pivotal in the execution of diverse online learning approaches, as evidenced in the case analysis expounded in the subsequent two segments. Understanding the influence of cognitivism, constructivism, and behaviourism theories on students' engagement in online learning enables students to take responsibility for their learning goals to ensure quality learning is attained in every learning environment.

The Relationship between motivation and learning control

Initially, goal orientations towards learning were regarded as orientations situated for action in an achievement task by scholars such as Ames (1992), Dweck (1986), and Nicholls (1984). Goal orientations, as opposed to content outcomes, consider the circumstances, motives, and methods of learning in individuals, as well as the environmental factors that influence them (Anderman & Maehr, 1994; Pintrich & Schunk, 2002; Carlos et al., 2023). The initial conceptualisations of goal orientations were associated with contextualised objectives for undertaking actions. In contrast, subsequent conceptualisations bore a more remarkable resemblance to fundamental tendencies towards involvement in learning (Nicholls, 1992; Carlos et al., 2023). According to Kaplan and Maehr (2007), students can assume responsibility for their engagement and achievement when the environment facilitates it, as reflected in both conceptions. Lecturers may find goal orientation appealing as they prioritise individual students' accountability. According to Ryan and Deci (2000), to adopt a goal orientation towards learning, it is imperative to establish and sustain learning environments that consider the affective dimensions of learning, including student motivation.

According to self-determination theory (SDT) (Deci & Ryan, 2000; Zhou & Li, 2023), the presence of choice significantly impacts student success. The Self-Determination Theory (SDT) posits that learning environments should be designed to facilitate motivation and enhance overall academic achievement. Self-regulated learning (SRL) refers to students' intentional and self-directed actions to enhance their academic performance (Boekaerts, 1995; Winne & Hadwin, 2010; Zimmerman & Moylan, 2009; Zhou & Li, 2023). The SRL framework entails the utilisation of metacognitive abilities by students to engage in proactive thinking, performance, and self-reflection, as posited by Dignath and Büttner (2008) and Ergen and Kanadli (2017). Most self-regulated learning (SRL) models consist of three primary components: forethought, performance, and self-reflection.

Various constituent components are implicated in distinct subroutines within the process of self-regulation. Students establish objectives, predict potential challenges, and formulate strategies during the forethought phase. In the performance phase of learning, students employ various strategies to facilitate learning and maintain focus. Upon completing an activity, students engage in a self-reflection phase, assessing their performance and evaluating the learning process and outcome. Although SRL has gained significant support, it is essential to

acknowledge that a considerable amount of initial research on SRL was conducted on university students and other motivational factors. Despite lacking motivation theories suitable for young students, SRL has been implemented in higher education educational environments (Zheng, 2016). The employment of online learning, encompassing its implementation at the higher education level, has garnered proponents who ardently endorse its utilisation due to its capacity for student autonomy. According to Beck et al. (2014), many parents opt for online learning for their children to seek greater autonomy in the learning process and protection from emotional harm, such as bullying, instead of seeking a more structured curriculum. According to Rose (2000), Carlos et al. (2023), and Zhou and Li (2023), the agency has a positive impact because it takes into account students' preferences and caters to their needs and differences. Therefore, the requirement for adaptability necessitates the consideration of self-regulated learning in completely virtual education. Amidst the current pandemic, the anticipation of acquiring knowledge at any given moment and location is unlikely to diminish (Gamede et al., 2022; Zhou & Li, 2023).

Cognition and its Relationship to Structured Online Learning

According to Kirschner et al. (2006), cognitive load theory (CLT) research is calling into question theoretical perspectives on self-directed learning, such as SRL. According to research on Cognitive Load Theory (CLT), making choices can impose cognitive strain on students, leading to confusion, distraction, and mental exhaustion (Van Merriënboer & Sluijsmans, 2009). It is imperative for students who practice self-regulation not to concentrate solely on accomplishing tasks to acquire knowledge. According to Ayres and Paas (2009), individuals must self-assess their comprehension and strategies to effect changes in instances of failure or when their objectives shift. Comprehending such intricate concepts may pose a challenge, particularly for juvenile students and those without suitable co-regulation encounters with their guardians or other caretakers before their enrolment in educational institutions (Hadwin et al., 2016).

As per Turkkila and Lommi (2020) and Carlos et al. (2023), the exposure of students to intricate content may result in varying levels of participation in online learning due to differences in their background knowledge and prior experiences. Therefore, providing carefully structured materials and activities is imperative to ensure equitable student engagement. Scaffolding within a course may moderate the cognitive load resulting from the metacognitive demands of self-regulated learning (SRL). There are two possible methods for virtually guiding students through problem-solving in particular content areas: guided instruction, as put forth by Mayer (2004), or work examples, as put forth by Sweller and Cooper (1985). It is imperative to consider the intricate interplay between the affective need for control and the cognitive need for structure to develop effective course design that promotes student success in fully online learning environments. This is particularly crucial during the unprecedented challenges posed by a global pandemic. This phenomenon can be attributed to the significant social and economic upheaval, which may significantly alter educational priorities.

This study explores student control and structure integration for fully online learning. In conventional educational settings, self-regulated learning (SRL) is typically supported through scaffolding techniques such as:

- Assistance from a lecturer in establishing an efficient learning environment.
- The accessibility of resources for arranging and coordinating content and tasks.
- The process of self-evaluation is facilitated through the practice of student reflection.
- Ley and Young (2001) have posited that the acquisition of self-monitoring skills can be facilitated through instructional feedback and encouragement.

The strategies are centred on the role of lecturers as the primary co-regulators of the learning process. The provision of self-regulated learning (SRL) assistance in higher education is reduced in fully online learning environments because of the need for a tangible lecturer presence. According to Archambault and Crippen (2009) and Rice et al. (2019), lecturers possess a significantly reduced level of authority over the materials used in the curriculum. Incorporating strategies for self-regulated learning (SRL) into course design is imperative for integrating SRL as a learning platform feature in remote learning. One illustrative instance is facilitating content and activity organisation by providing appropriate tools. Additional assistance may be provided by on-site mentors, who are adult individuals who offer in-person guidance to students (Borup et al., 2015).

There is ongoing experimentation and provision of virtual mentoring services that utilise artificial intelligence (AI) for students. The potential of AI coaching tools to facilitate the utilisation of content learning or self-regulated learning strategies by students and on-site mentors is noteworthy. According to Siemens (2013), specific artificial intelligence systems can detect instances when students have ceased work and provide assistance. These systems may also transmit relevant information to human mentors who can aid the students in resuming their tasks. Although various advanced technological solutions are being developed to facilitate content and self-regulated learning (SRL), their implementation has yet to be widespread. The categorisation of self-regulated learning (SRL) strategies in higher education online environments has been derived from various extant studies and can be broadly classified into the following types:

- Students' contemplation of their online learning approach
- Facilitating pacing assistance
- Observing and tracking individuals' level of involvement and interaction with educational resources
- Assisting families.

Subsequently, these factors will be assessed within the framework of the dichotomy between student autonomy and the necessity for cognitive organisation.

Requesting students to contemplate their learning process in online learning environments

According to Harris et al. (2020), the self-regulated learning (SRL) process necessitates that students engage in metacognitive reflection regarding their learning strategies. According to

Rice and Carter (2016), lecturers who teach online have prioritised facilitating students' comprehension of the distinctions between online and traditional classroom learning. Various approaches have been employed to depict this distinction, such as elucidations and deliberate inquiries regarding the nature of tactics necessary in the conventional context and how students anticipate that it may diverge in the online realm. Implementing a strategy that involves directly soliciting the expectations of students is a valuable approach.

Nevertheless, students may require some direction in establishing suitable anticipations for virtual education. The notion that online learning is simpler than traditional learning due to the convenience of studying from home requires a critical examination. In addition to imparting knowledge on cognitive processes and online learning, lecturers have implemented typical questioning techniques in conventional literacy education. These methods involve students generating queries, selecting appropriate online resources or search terms, conducting searches, and presenting their findings (Harris et al., 2020). The designated reports entail replies and accounts of the methodologies employed to obtain said responses. The potential difficulties associated with this approach are expected to arise in situations where students exhibit low self-efficacy in formulating inquiries, experience multiple unsuccessful attempts in generating search queries that produce relevant outcomes, encounter difficulties in maintaining focus during the search process, face challenges in selecting pertinent information to include in their report, and encounter obstacles in composing the final report (Kirschner et al., 2006). Potential instructional design frameworks that could prove beneficial encompass a collection of questions, either exemplars or a repository of options, and hyperlinks to resources pertaining to the inquiries. Additionally, organisers or guides for documenting data work examples and report templates could be incorporated (Mayer, 2004; Sweller & Cooper, 1985).

Facilitating pacing assistance

To facilitate effective planning, the expectations for learning must be unambiguous and succinct (Zimmerman, 2008). The conveyed anticipations could pertain to various aspects such as resources, schedule, or etiquette. Once students possess this information, it is expected to facilitate their pacing during the performance. Several online learning programmes and courses provide the opportunity for flexible pacing, as indicated by Allday and Allday (2011), Rice and Carter (2015, 2016), and Zhou and Li (2023). The flexibility manifested itself in the form of supplementary time in said instances. According to Allday and Allday's (2011) findings, online lecturers have reported utilising pacing support to assist students with disabilities. However, there appears to be no discernible discrepancy in the pacing requirements of students with and without disabilities in the context of online learning. Ensuring suitable pacing could be significant, especially in emergency remote education.

The significance of pacing lies in that certain students may experience a conflation of days or become engrossed in prolonged online activity. Variations in internet accessibility and device type may also contribute to fatigue among certain students (Ajani, 2022b). Individuals progressing through educational modules via a mobile device or a low-bandwidth internet connection may accomplish a comparatively smaller amount of coursework within a given timeframe than an individual utilising a laptop and high-speed internet (Ajani, 2023b). An

alternative scenario could be that students could experience cognitive overload due to the intricacies of the course material and sophisticated digital platforms. According to Rice et al. (2019), extended periods of feeling overwhelmed may negatively impact online students' academic performance and self-efficacy.

In general, the regulation of pacing is a personalised process that necessitates attentive monitoring from lecturers and mentors present on-site to assist the students. Prior studies have indicated that pacing support can be provided to students through a guide that outlines specific due dates, albeit with some flexibility, for submitting assignments or reporting on their progress (Rice & Carter, 2016; Ajani, 2022; Carlos et al., 2023; Zhou & Li, 2023). Although these instructional materials could benefit certain students, they might not offer adequate assistance to others. Moreover, it has been suggested that more than standardised pacing guides may be needed when students opt for personalised pathways (Mayer, 2004; Carlos et al., 2023). According to Rice and Carter (2016), certain students may require practical experience and guidance from a lecturer or an adult mentor present on-site to utilise the instructional guides effectively.

Observation and assessments of students' level of involvement and interaction with educational resources

Instances where students abruptly discontinue attending classes or decline their academic performance could indicate affective disruption. According to Madjar et al. (2011), individuals who lack comprehension of tasks or perceive inadequacy in their abilities or resources to accomplish them may exhibit task avoidance. A notable approach derived from scholarly investigations on online pedagogy is to meticulously observe the involvement and interaction of students with educational resources (Archambault et al., 2013; Rice & Carter, 2015; Rice & Carter, 2016; Carlos et al., 2023). These strategies utilise technological tools to monitor the utilisation of educational resources by students, including the frequency and duration of their usage. Monitoring has been accomplished through various methods. According to Rice and Carter (2016), particular lecturers have employed dashboards via a learning management system (LMS).

According to Borup et al. (2019a), there are instances wherein parents or others are granted access to a dashboard. The dashboards offer insights into the frequency and timeliness of students' engagement with the learning platform, including their login activity and assignment completion status. Lecturers who teach through online platforms search for recurring patterns, such as: Did students submit their assignments during the late hours of the night? Is this activity limited to weekends exclusively? Is it permissible to have meetings or check-ins only after class? The data proved valuable in creating assistance for regulating a given task's pace. Rice and Carter (2016) reported that additional student assistance was provided via self-paced integrated resources within the course materials. An instance of scholarly inquiry pertained to the provision of an instructional video that spontaneously appeared for students. When the curriculum did not incorporate such aid, students were furnished with beneficial resources such as glossaries tailored to specific content, concise videos for topical reviews, or general inquiry engines (Dembo & Eaton, 2000; Rose, 2000; Zhou & Li, 2023). Probable obstacles arise in

facilitating students' comprehension of the appropriate employment of these tools, guaranteeing that they are composed at a level of reading proficiency that is self-sufficient for all students, and ascertaining the circumstances under which the utilisation of these aids should be mandatory rather than discretionary (Rice, 2018).

Facilitating social and emotional assistance to families

According to Sha et al. (2012), students must acknowledge the availability of on-site assistance for self-regulated learning (SRL) in the context of online education. Before the onset of the COVID-19 pandemic, lecturers who taught online courses were heavily dependent on parental or mentor involvement in self-regulated learning (SRL) in most developed countries. This included monitoring student progress, offering encouragement, conveying information about assignments and accomplishments, and providing instructional assistance. (Borup et al., 2019a, 2019b; Rice & Carter, 2015, 2016; Sorenson, 2019). The establishment of consistent communication patterns regarding the provision of support for self-regulated learning (SRL) is deemed crucial for a successful transition to online work, given the varying perceptions, expectations, and abilities of parents or other on-site mentors (Carter et al., 2016; Carlos et al., 2023).

Content designers for online learning should consider that students may lack access to parental or other on-site mentors who can support their learning. This assertion is particularly probable as the duration of the pandemic persists. This presents a novel challenge wherein the adults who assist inexperienced students necessitate supplementary support integrated within the curriculum to achieve favourable outcomes. The circumstances highlight the need for lecturers and students to use effective strategies, such as work examples (Sweller & Cooper, 1985; Zhou & Li, 2023). Furthermore, adult mentors may have developed avoidance strategies before or in response to the pandemic's impact, as Madjar et al. (2011) suggested. Regardless of the circumstances, carers and other adults possess cognitive, affective, and socioeconomic requirements as users.

Conclusion

The outbreak of COVID-19 has presented a novel alternative to the education process for lecturers, students, and households. Online learning presents students with opportunities as well as challenges. The challenges resonate with the tension between providing emotional support to students through choices and control and establishing adequate structure within a course. Amidst the pandemic and beyond, instructional design may contemplate strategies to facilitate students' academic success by addressing their goal orientations and the requirement for structure. Considering the students' needs in conjunction with the aspirations and aptitudes of parents or other adult decision-makers in the education system is imperative. Significant determinations beyond students' control involve the selection between online learning and traditional face-to-face classrooms equipped for distance education, the adherence to a conventional academic calendar, and the potential alternation between online and traditional modes of learning.

Prior studies have indicated that a significant portion of the online support for self-regulated learning (SRL) has relied on enlisting the assistance of parents or other adults to engage in the co-regulation of students using pacing and monitoring techniques. Before the pandemic's onset, particularly in its wake, delegating most student support responsibilities to parents and on-site mentors was deemed an inadequate strategy. The utilisation of AI in this domain exhibits potential; however, further investigation is required to determine efficacious approaches for diverse age groups in different disciplines and their optimal presentation methods. AI applications may necessitate supplementary technological devices for accessibility. Consequently, students encounter socially and economically segregated prospects to reap advantages from artificial intelligence and remote education in a broader sense. Access-related concerns could be mitigated through governmental investment in internet infrastructure, device allocation, and training programmes to enhance digital literacy. However, the accessibility of technology may also deteriorate due to economic downturns or inadequate prioritisation by policymakers and decision-makers.

Online learning designers must create interfaces incorporating structures that allow for choice, which can be utilised across various devices with varying internet speeds. Although specific techniques, such as worked examples, may retain their efficacy, selecting appropriate examples, delivering them, and evaluating comprehension may significantly change fresh students' engagement in online learning. One of the requirements in the domain of learning science is to construct SRL models that consider students' forethought, performance, and evaluation abilities in a meaningful manner. Additional factors of significance to fresh or inexperienced students may still need to be discovered, particularly in frameworks that consider variations in cognition and motivation when advanced technologies are present. The strategies delineated herein serve as a preliminary basis for researching the execution of online and distance education. Despite the unexpected nature of the pandemic and the resulting disruptions, it is possible to enhance the quality of online learning in higher education by drawing upon prior research and making informed predictions.

Recommendations

Findings from various studies affirm that online learning has been massively adopted and enhanced globally as a significant approach to teaching and learning before, during, and after the pandemic. Establishing clear expectations and exemplifying active student participation in online learning should be encouraged. It is advisable to establish communication with students before the commencement of the learning experience.

It is imperative to unambiguously specify the deadlines for giving assignments to students on various online platforms. Students must have a well-defined timetable outlining the sequence of events and deadlines for the assignments in the academic programme. Various approaches can be employed to achieve this objective. These include incorporating a matrix containing activity deadlines in the course syllabus, producing an expedited reference guide that outlines deadlines by week, unit, or module, and utilising deadlines in Blackboard activities and assignments to ensure that they are displayed in students' Blackboard course calendar and activity stream.

It is recommended that early access to the course is available on the Blackboard platform. This will extend a warm welcome to the students at the outset of the course and initiate the course ahead of schedule to allow ample time for them to acquaint themselves with the course navigation. Disseminate a notification to inform the students of the availability of the course.

It is advisable to establish a schedule for office hours and communicate it in advance to students through lecturers teaching different modules. Establishing designated time slots for office hours can facilitate opportunities for students to seek clarification and engage with lecturers regularly during the course duration. Prompting the lecturer assistant or tutors to conduct office hours and engage in intermittent outreach to the students enrolled in the course to ensure their sustained involvement is advisable.

Expectations and course policies should be integrated into the syllabus and the online course platforms. This will ensure that students can access this critical information in multiple formats and refer to it as needed throughout the course.

It is imperative to communicate to the student the specific requirements and criteria expected of them and the strategies and methods they can employ to fulfill those expectations. Incorporating these reminders into the syllabus is crucial, as it reinforces the expectations within the course and is likely to be well-received by students. It is advisable to incorporate guidelines for discussion etiquette in discussion forums or to provide precise attendance requirements before a virtual class meeting.

Student engagement and motivation should be enhanced through adequate and appropriate academic content and activities. Students should be provided with a diverse range of educational materials. Open educational resources and other easily accessible media can offer a more extensive viewpoint. Various forms of content, such as textbooks, journal articles, multimedia, and interactive learning objects, can be made available to students. A brief introduction that gives a general overview of the topics covered in the modules comes with each module.

Students should be encouraged to express their reflections regarding their learning experiences from various online learning opportunities. The phenomenon of metacognition is a significant driving force behind students' motivation in their learning endeavours. Facilitating the capacity of students to investigate, modify, and generate is necessary for self-regulated learning. The adeptness in creative abilities among students can prove to be a valuable resource. When deemed suitable, it may be beneficial to provide students with the option to choose their preferred method of completing an assessment or to task them with sourcing content that aligns with the given parameters.

References

Ajani OA (2021). Teachers' Use of WhatsApp Platforms as Online Communities of Practice for Professional Development, *Journal of African Films & Diaspora Studies (JAFDIS)*, 4(1), 103–129. DOI: <https://doi.org/10.31920/2516-2713/2021/4n1a6>.

- Ajani, O. (2022a). Decolonising Teacher Education in Pursuit of Multilingual Teaching and Learning in South African Higher Education. In E. Charamba (Eds.), *Handbook of Research on Teaching in Multicultural and Multilingual Contexts* (pp.122–142). IGI Global. <https://www.igi-global.com/chapter/decolonising-teacher-education-in-pursuit-of-multilingual-teaching-and-learning-in-south-african-higher-education/310733>.
- Ajani, OA (2022b). Students' Perceptions of Online Learning during COVID-19 Lockdown: The Realities of Social Justice for Rural University Students, in a book titled "Impacts of the COVID-19 Pandemic's Distance Learning on Students and Teachers in Schools and in Higher Education – International Perspectives" (A book chapter with the University College of Teacher Education, Styria, Austria). Pp. 126–144. https://www.leykamverlag.at/wp-content/uploads/2022/08/PHSt-StBR_Bd15_Kern_web_2022-08-08.pdf.
- Ally, M. (2004). Foundations of Educational Theory for Online Learning, In Anderson, T. & Elloumi, F. (Eds.): *Theory and practice of online learning*, Athabasca University, Athabasca.
- Alyoussef, I. Y. (2023). Acceptance of e-learning in higher education: The role of task technology fits with the information systems success model. *Heliyon*, 9(3).
- Atkins, M.J. (1993). Theories of learning and multimedia applications: An overview, *Research Papers in Education*, 8(2), 1993, pp. 251–271.
- Boethel, M., & Dimock, K.V. (1999). *Constructing Knowledge with Technology*, Southwest Educational Development Laboratory, Austin.
- Carlos, C. M., Maggiore, N. M., Dini, V., & Caspari-Gnann, I. (2023). Characterising facilitation practices of learning assistants: an authoritative-to-dialogic spectrum. *International Journal of STEM Education*, 10(1), 38.
- Cooper, P.A. (1993). Paradigm shifts in designing instruction: From behaviourism to cognitivism, *Educational Technology*, 33(5), 12–19.
- Duffy, T.M. & Cunningham, D.J. (1996). Constructivism: Implications for the Design and Delivery of Instruction. In Jonassen, D.H. (Ed.): *Handbook of Research for Educational Communications and Technology*, Simon & Schuster Macmillan, New York, 1996, pp. 170–198.
- Gamede, B.T.; Ajani, O.A. & Afolabi, O.S. (2022). Exploring The Adoption and Usage of Learning Management System as Alternative for Curriculum Delivery in South African Higher Education Institutions during Covid-19 Lockdown, *International Journal of Higher Education*, 11 (1), 71-84. <https://doi.org/10.5430/ijhe.v11n1p71>.
- Hooper, S. & Hannafin, M.J. (1991). The effects of group composition on achievement, interaction, and learning efficiency during computer-based cooperative instruction, *Educational Technology Research and Development*, 39(3), 27–40.

- Keller, J.M. & Suzuki, K. (1988). Use of the ARCS motivation model in courseware design. In Jonassen, D.H. (Ed.): "Instructional design for microcomputer courseware, Lawrence Erlbaum Associates, Hillsdale, 1988, pp. 401-434.
- Kolb, D.A. (1984). *Experiential learning: Experience as the source of learning and development*, Prentice-Hall, Englewood Cliffs.
- Leyer, M., Yuan, B., Wang, M., & Moormann, J. (2023). Classroom or online learning? Impact of experiential learning in business process management education. *Knowledge Management & E-Learning*, 15(2), 214.
- Lin, H. M., Wu, J. Y., Liang, J. C., Lee, Y. H., Huang, P. C., Kwok, O. M., & Tsai, C. C. (2023). A review of using multilevel modeling in e-learning research. *Computers & Education*, 198, 104762.
- McLeod, G. (2003). *Learning Theory and Instructional Design*, *Learning Matters*, 2, 35–43.
- Merrill, M.D. (2001). Components of Instruction Toward a Theoretical Tool for Instructional Design, *Instructional Science*, 29(4), 291–310.
- Meyer, R.E. (1998). Cognitive, metacognitive, and motivational aspects of problem-solving, *Instructional Science*, 26(1-2), 49–63.
- Mödritscher, F. & Sindler, A. (2005). Quizzes are not enough to reach high-level learning objectives! In *Proceedings of the World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED-MEDIA 2005)*, AACE, Montreal, 2005, pp. 3275-3278.
- Murphy, K.L. & Cifuentes, L. (2001). Using Web tools, collaborating, and learning online, *Distance Education*, 22(2), 285-305.
- Myers, I. (1978). *Myers-Briggs type indicator*, Consulting Psychologists Press, Palo Alto, 1978.
- Paivio, A. (1990). *Mental representations: A dual coding approach*, 2nd ed., Oxford University Press, Oxford.
- Pangarso, A., & Setyorini, R. (2023). The drivers of E-learning satisfaction during the early COVID-19 pandemic: empirical evidence from an Indonesian private university. *Cogent Education*, 10(1), 2149226.
- Sindler, A. (2005). Einführung von Fernstudienelementen am Campus02, internal project report, Campus02 University of Applied Sciences, Graz, 2005. (In German).
- Skinner, B.F. (1974). *About behaviourism*, Knopf, New York, 1974.
- Witkin, H.A., Moore, C.A., Goodenough, D.R., & Cox, P.W. (1977). Field-dependent and field-independent cognitive styles and their educational implications, *Review of Educational Research*, 47, 1–64.

Zhou, L., & Li, J. J. (2023). The impact of ChatGPT on learning motivation: A study based on self-determination theory. *Educ Sci. Manag*, 1(1), 19–29.