



Adaptation to Online Learning and Its Impact on Students' Self-Regulation Development During the Pandemic of COVID-19

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ABSTRACT. Self-regulation is an essential skill that enables people to manage and control their emotions, behaviors, and thoughts. Its development has a significant impact on the lives of humans. Educators have studied it for decades after realizing its significance. However, under the circumstances of COVID-19, students were forced into the online learning environment. Therefore, this is a valuable opportunity to research the development of self-regulation in online learning. In the meantime, as an adaptation to online learning processes, self-regulation would be impacted by shifting instructional tactics and teacher directives. At an early age, the majority of pupils maintained their previous learning practices, and self-regulation development was not evident. In the middle stage, students' levels of growth varied based on their prior academic accomplishments, major, and age ranges. Students' self-development improved in general as a result of their realization that enhancing self-regulated learning would improve their academic achievement. Meanwhile, teachers were encouraged to develop more self-regulation skills and activities for pupils. Nevertheless, due to the paucity of previous studies, it is suggested to do additional studies in other educational sectors.

Keywords: education, online learning, self-regulation, adaption

1 INTRODUCTION

1.1 Self-Regulation

The Significance of Self-Regulation.

Self-regulation is the capacity to govern and display appropriate behaviors, and it is viewed as a cyclical process with three components: foresight, performance control, and self-reflection [1]. Self-regulation plays a key role in adolescent development, predicting performance in several areas, such as school and social interactions [2]. Additionally, self-regulation abilities are crucial for a child's development and learning [3]. Studies demonstrate a correlation between self-regulation ability and academic success in preschool and elementary school [4]. Consequently, self-regulation development has become a topic of increasing importance for students, parents, and educators.

Influence Self-Regulation Elements.

Sameroff (2010) proposed that self-regulation is the result of interactions between individual factors and life events. Individual characteristics, such as age, gender, and temperament, are associated with systematic disparities in levels and developmental trajectories of emotion regulation [5]. The socioeconomic position would also influence the development of self-control since different levels of educational support, such as after-school activities and early childhood education, would be provided depending on a person's means [6]. As the prevalence of online learning grows, the amount of focus placed on self-regulation development is gradually growing. In this instance, a recent study concluded that teachers must comprehend the potential of technology to facilitate self-regulation and then integrate it into the online learning environment [7]. During the COVID-19 epidemic, numerous schools and educational institutions shifted from traditional face-to-face instruction to online learning. Therefore, self-regulation and online learning are inextricably linked, and it is urged to conduct additional research into how online learning can influence the development of self-regulation.

1.2 COVID-19 Online Learning

Student Adaptation.

COVID-19 has ushered in a new era in education that impacts people's lives, and online learning is a trending kind of mainstream education. Thus, students would be required to adjust to the new learning mode, requiring them to alter their behavior in order to maintain or improve their performance. Adaptation refers to adjustments to society's needs, limits, and other factors, such as the capacity to live and work in harmony with others and to have pleasant social interactions and relationships [8]. According to the findings of a previous study, when students adopt the online learning mode, they rely heavily on instructors' courses and support, which has a negative impact on their self-regulation and autonomy. Students would also attempt to adjust to online learning by utilizing self-regulating learning mechanisms, but their poor approaches would not directly improve their grades [9]. As a result, online learning would cause students to adapt to the online environment, and it is significant to examine how students' adaptation to online learning would impact their self-regulation development during the COVID-19 pandemic.

School Adaptation.

In the meanwhile, schools would also modify their instructional methods to improve student's learning experiences. According to a study conducted in 2015, schools must develop an adaptive online learning environment and provide adequate learning content to facilitate the adaptability formation of students [10]. In other words, schools and educators produced their designs and school adaptations to assist students in adapting to online learning, and the role of the school would influence students' adaptation, which in turn influences the development of self-regulation.

In light of this, the purpose of this work is to summarize and recombine previous research on adaptation, online learning, and self-regulation development. It would give

educators a comprehensive knowledge of how these factors interact in the present condition.

2 LITERATURE REVIEW

2.1 Self-Regulation Development Measurement

The move from traditional face-to-face learning to online learning compels students to adjust to the new educational environment, with varying degrees of self-regulation development resulting from these adaptations. For instance, Dinsmore et al. (2008) demonstrated that self-regulation is concerned with how the environment simulates the awareness and regulatory reaction of individuals [11]. This study also shows how self-regulated learning can be viewed as the domain of self-regulation, with an emphasis on academic success. To attain learning objectives, students must learn to control their behavior in the learning environment. Self-regulated learning is a social cognitive learning strategy that determines the success of learners [12]. This research will therefore utilize self-regulated learning as a measure of self-regulation development.

2.2 Different Stages of COVID-19 and Students' Self-Regulation Development

COVID-19 offered educators and students a new learning environment. This moment in time suggests that additional research is encouraged, as a fresh environment implies distinct development. Another study also suggests that teaching requires external instruction and guidance [13]. However, the learner must incorporate this external impact into their system of self-regulation. Consequently, external educational influences can impact students' self-regulation development throughout the COVID-19 epidemic. Adaptation to the new environment will have observable consequences on the practice of continual adjustment. This session is structured into two parts, each of which analyzes how adaptation to digital training influences self-regulation at different phases of COVID-19.

Early Stage.

Online learning propels educators and students into the digital world, and the introduction of new technology and online learning modes suggests that new obstacles and duties will need to be adapted. During the initial phases of COVID-19, the majority of schools that are qualified to adopt online learning mostly utilize Google Classroom, Zoom, and Bigbluebottom. Recent research from April 2020 to May 2020 revealed that 90.5% of students believed classroom instruction to be the superior learning platform, while only 9.5% favored online instruction [14]. In the early stages of the pandemic, pupils are therefore not comfortable with online learning. In addition, another study found that students had more difficulty managing their time and regulating their attention and effort. They are reportedly less motivated than in-person instruction [15]. Since students' adaptability to novel learning contexts varies, In this study, researchers

separated students into four subgroups with varying responses to online learning. According to the findings, just 19% of students are adaptable, meaning that they swiftly alter their learning processes to meet the demands of online learning assignments. However, 34% of students reported maintaining their previous study patterns, while 56% felt overwhelmed and less motivated [15]. As a result, it may be inferred that the majority of students did not develop appropriate techniques for online learning and were not adaptable to the ever-changing learning environment. Some students have reported that reduced collaboration between professors and learners necessitates increased self-regulation learning. However, they become less motivated and frustrated with online education.

In addition, in the early months of COVID-19 emerging online learning, educators did not establish effective instructional methods. The implication of a 2020 study is that students should receive sufficient advice on self-regulated learning practices during the initial period of online training [11]. The finding of the study indicates that students' adaption did not correlate with their prior academic accomplishments; therefore, teachers should not presume that students will adapt to online learning based on their former academic achievements. According to recent research, Chinese preschoolers were compelled to engage in online learning without preparation or instruction, and parents are required to oversee their children's use of digital devices. Due to the absence of a learning environment, Chinese parents held negative sentiments concerning internet education for their children. According to the findings, students would spend more time watching recorded classes since they would view them several times, and the effectiveness of online courses for young children is insufficient. Without preparation and training, online learning at a young age generated numerous difficulties and concerns, and it was not anticipated that kids' self-regulation would improve [16].

However, other research suggests that students with higher academic achievement are better suited to the online learning environment since they are able to reuse their knowledge [17]. In addition, the authors drew the conclusion that students with more academic aptitude could rapidly establish self-regulation characteristics that improve their transition to autonomous online learning. Even though students' past academic achievement cannot predict their adaptability and subsequent academic success in online learning, students with stronger academic foundations will develop self-regulation more quickly than those with academic issues. Educators are therefore recommended to examine task requirements and employ more collaborative tasks linked with self-regulated learning, which may facilitate students' academic performance during the online learning epidemic [9]. At the beginning of COVID-19, students' knowledge of the limitations of online learning rose, and they devoted more emphasis to enhancing their capacity to self-regulate. In general, the early stage of the development of self-regulation can only reveal a change, not its extent or influence on students [18]. According to a new study, from Fall 2019 to Spring 2020, there was little or no influence on overall student involvement, despite the fact that a growing proportion of students modified their self-regulated learning strategies and plans [19].

Middle Stage.

According to a study conducted between 2021 and 2022, during the middle phase of

the pandemic, students' use of self-regulated techniques in their online courses increased from moderate to high. In contrast to the early stage, students in the middle stage grasped the significance of self-regulated learning practices, which greatly aided their self-regulation growth. In addition, as students' awareness of self-regulated learning strategies grows, they eventually apply these tactics to a wider range of disciplines [20]. Students' stress levels increased as the school's closing time grew longer due to an imbalance between life and study and overloaded course loads. However, self-regulatory efficacy mitigated the increase in student stress following the COVID-19 epidemic and campus closures in the spring of 2020 [21]. In this instance, pupils with greater self-regulatory efficacy are able to prevent procrastination, hence reducing stress and apathy. In addition to lectures, certain practice-based majors exhibit enhanced self-regulation. A study conducted at a nursing institution in South Korea revealed, for instance, that students' self-regulation scores increased. In this manner, the study found that the learning flow increased following online learning sessions and that the learning flow could be completed without teacher supervision [22]. The finding is significant and valued since it demonstrates that practice-based online courses benefit from online learning. Students can also develop self-regulation by pursuing their learning objectives.

On the other side, teachers and instructors were motivated throughout the middle phase of the pandemic, and they continue to be urged to teach self-regulation skills to enhance student's capacity and make it easier for them to adjust to tough learning contexts. Furthermore, some study suggests that family interaction is necessary for the development of self-regulation during online learning. Ms. Montes suggested, for instance, that some students with disabilities are unable to improve their self-regulation due to an unsupportive family environment, and she desired to provide more training to the family so that students can cultivate their independence and self-regulation in a supportive environment [23]. During the middle phase of COVID-19, students gradually adapted to the new learning mode and various learning tactics. Significantly, students profited from online learning, and their self-control improved substantially. They realized that self-regulated learning improves their academic performance, which prompted them to implement it in more contexts. In the meantime, teachers discovered that limits occurred in the early phases of the pandemic, so they adapted their curricula and teaching methods accordingly. This level is characterized by a greater emphasis on the development of strategies that support pupils' self-regulation. Despite the fact that some studies reveal that students' self-regulation has improved, other research suggests that students' prior experience and academic achievements are related to their self-regulation growth. In addition, when combined with factors such as technology accessibility, student characteristics, and family support, the gap between pupils widens, potentially affecting their future academic and personal development. In conclusion, self-regulation does improve in online learning, but the degree of growth is difficult to assess due to the diversity of student circumstances.

3 Conclusion

3.1 Current Status and Impact

As the year 2022 draws closer to its completion, the COVID-19 epidemic has developed into an almost regular aspect of life across the globe. In 2019, students were subjected to a quick shift, and the environment of online learning caused fear and tension in an almost unavoidable manner. The majority of institutions have returned to face-to-face instruction, and the majority of students have also returned to the traditional mode of instruction. In their future, however, enhanced self-regulated learning mechanisms will be implemented and affect their academic life continuously. Due to the fact that the pandemic does not come to an end entirely, the international academic environment does not recover from the pandemic learning situation. As a result, few studies assess the effect of self-regulation development on learning after COVID-19.

It is a rare and useful opportunity to study self-regulation through comprehensive online education for a variety of disciplines and age groups. During COVID-19, an evaluation of previously published articles on self-regulation revealed that there is a bigger need than was originally anticipated for finished investigations on this topic. Students attending colleges and universities in urban areas made up the vast majority of research participants and samples since they have easier access to online education. However, there is a dearth of research on online education for fields such as children and special education, indicating that there ought to be a larger emphasis placed on a variety of educational settings. In addition, online education is more widely available in urban areas; hence, efforts are being made to expand online education in rural areas and study its impact on one's ability to exercise self-control.

3.2 Limitations

Despite the fact that a minority of students might improve their capacity for self-regulation in online learning as a result of the COVID-19 pandemic, these students are in the minority. Many students still have difficulty finding the educational resources they need, and the tools for online learning are even more difficult to get a hold of. For instance, a sizeable percentage of students do not have access to the online learning options available to them because of technological constraints. As a result, more studies focusing on disadvantaged groups in COVID-19 should be encouraged. In addition, this review only examines and summarizes a handful of research from each age group, and some age groups, such as elementary school students, are not included since there have not been enough previous studies conducted on them.

This review focuses the majority of its attention on self-regulation as a basis for academic success as a result of adaptation to online learning. On the other hand, the metric of academic accomplishment would be far too unbalanced to generalize the self-regulation measure. There are more metrics that can be used to investigate the growth of self-regulation. For instance, the Self-Regulation Questionnaire (SRQ) is a questionnaire that is used to examine the capacity to regulate behavior in general [24]. In general, it is necessary to do additional research employing many alternative approaches.

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