Chapter

Enhancing Self-Regulation and Metacognition in Online Learning

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Abstract

Nowadays, online education is in the limelight. During the COVID-19 pandemic, K-12 students endured an abrupt transition from everyday learning in classrooms to online education. In the process, the concept that learning only occurs if students are physically present in a classroom has changed drastically. As the spaces and interactions are different, teachers need formal training, flexibility, and willingness to provide efficient online education that adjusts to the new and fluctuating realities. Simultaneously, students need to enhance self-regulation and metacognition and be the leaders of their education process and results. It is pivotal that teachers keep in mind that close relationships with students and families and personalized support are critically important to fostering ties, developing knowledge, and preventing school dropout. Consequently, curricula must respond to students' singularities, socioeconomic conditions, contexts, resources, and interests. This chapter advocates that teachers should support students to work on the development of self-regulation, metacognition, collaborative technology-mediated tasks, and problem-solving in online environments. These are tools that help students to be autonomous, engage with their learning process, learn, create knowledge, decide accurately, improve their creativity, and increase intrinsic motivation skills.

Keywords: collaborative learning, metacognition, online learning, self-regulation, teachers' role

1. Introduction

At the height of the COVID-19 lockdown in 2020, more than 160 countries mandated school closures and alternative learning forms, mainly through online education, for at least 1.5 billion children and youth [1]. The rise in online learning experiences has significantly changed the landscape of instruction. They entail other pedagogical approaches than traditional learning experiences. K-12 students are not physically present in school during online learning processes; then, as they have not been trained for this situation, interactions with peers and teachers are complex.

The startling education problems that the school system is enduring now in some parts of the world are not the direct consequence of school closure and online learning. Even before the pandemic, there had been concerns about school-dropout problems, the low graduation rate of K-12 students, low equity and quality in K-12 Schools, and the impact of poverty on the students' performance in school [2–7]. Undeniably, schools need to improve their overall structure, approaches to education and children, parental-school communication, and teaching strategies. The

current emergency time should be harnessed to make significant changes for the students' academic, social, and personal success.

Due to the sanitary crisis, K-12 students worldwide have not been in-person in school for a prolonged period. This situation has made significant impacts on students' accomplishments, and the dropout rates have increased. Discouragingly, millions of K-12 students have dropped out of school due to the digital divide, the inadequate preparation of teachers to give online classes, and the emotional and economic challenges they have faced during the pandemic. Literature suggests that dropping out may lead to a plethora of detrimental outcomes such as child marriages, crime, domestic violence, early pregnancies, little probability to re-enroll in study programs, fewer opportunities for growing financially over the long term, social costs for the countries, and risk of incarceration [8–10]. Learners under economic, academic, or emotional duress may consider being self-directed a complicated task. Nevertheless, the school system should use online instruction for the benefit of the students. Online learning should not be a hindrance for learners and the cause of of dropping out. In fact, it is a way of providing high-quality education to the students and reaching out to them more efficiently, enabling teacher-to-student and student-to-student interaction and assisting students in learning at their own pace with the help of their teachers, peers, and parents. Additionally, teachers can propose multiple activities such as interactions in forums, chat groups, video presentations, games, meetings, and document sharing. Governments should ensure to implement training courses to teachers and students about online learning and provide technical tools and Wi-Fi connectivity if they need them. Teachers should be willing to develop online teaching expertise because students have the right to access well-qualified teachers who respond favorably and flexibly to the changes that the current liquid society demands. Indeed, teachers should be able to create dynamic and exciting learning environments to strengthen their students' learning.

Schools should use online education wisely, promote practical knowledge output, motivate students to keep learning at any time and increase their longing and creativity to positively contribute to society. K-12 students all around the world need to have access to online education opportunities to ensure their right to education under any circumstance, especially in uncertain times. Teachers should design content and tasks that students enjoy and, at the same time, satisfy their academic and social needs. Online lessons, activities, and spaces should encourage students to learn, communicate, analyze other points of view and share their ideas confidently. In warranting achievement and motivation, it is required that teachers consider using digital tools with pedagogical strategies to yield learning opportunities for every student. In addition, teachers must engage with the learners and make pedagogical decisions in a spirit of respect, collaboration, and community.

Technology grants a wide range of teaching opportunities and resources. Consequently, teachers and students should learn how to use them to hold effective practices. Teachers are responsible for using their academic and empirical knowledge to devise a well-developed and methodologically comprehensive, rigorous, and inclusive curriculum that considers students' diversity. That way, both teachers and students can leverage the opportunities that technology and its environments provide to enhance learning about complex and demanding topics.

K-12 students defectively endowed with autonomous and responsible learning tend to stop studying, and get unmotivated quickly, mostly when they endure tough times. Unexpectedly and without having planned to provide online education, most schools have moved to remote learning to contain the spread of COVID-19. Furthermore, independently of the sanitary emergency, online education must inevitably be integrated into curricula at all levels. Teachers should prepare to be

experts in developing appealing, interactive, and goal-oriented lessons for online classes. The chapter's objectives are 1. to formulate strategies to make online learning successful, and 2. to explain how to use self-regulation and metacognition to excel students' online education process.

The study presents critical information to successfully undertake online education, focusing on the teachers', governments', students', and families' role. Definitely, online learning should be seen neither as a deficit model nor as a panacea. Its success or failure depends on how it is planned and structured. This chapter contributes to knowledge because it defends that online education can be used as an opportunity for the students' growth. There are social problems that should be solved, and suggestions are given. Remote learning should be used to guide students to be at the helm of their own education; increase their intrinsic motivation; develop their metacognitive, practical, collaborative, and social skills; choose accurately according to the situations; take initiatives; be organized; take risks through analysis; react to the unexpected; contrast; take responsibility; and be strategic to innovate. These elements are required tools to thrive in the 21st century.

2. Helping K-12 students to be motivated and self-regulated

2.1 Preventing dropout

Online education is altering the paradigm of physical schools. It can be shocking or appealing for some high-school students. Having access to devices and the Internet, and experience with blended or online instruction, are factors that help students to have a successful experience in online learning. Besides, their success also depends on their socioeconomic, emotional, and personal factors. Teachers should notice when students suddenly change their attitude or performance declines, do not attend online classes, or do not do the homework in the online environment. Those may be signs of demotivation, affective disruption, or difficult access to technology and connectivity. It is of paramount importance that teachers support them using alternative teaching methods, instructional materials, and practical tasks for their particular situation. Teachers must determine the root causes of students' low performance and apathetic attitude, and offer personalized support. Some signals of at-risk of dropping out K-12 students are:

- Behaving disrespectfully.
- Not attending virtual conferences.
- Not participating in the classes' discussions.
- Not presenting homework.
- Not responding to academic forums, blogs and chats.
- Not revising learning materials (documents, links, notes).
- Not taking online tests.
- Not turning in assignments.
- Parents not attending neither calls nor e-mails.

- Using inappropriate language.

Educators should strengthen bonds with students so that they do no dropout. They should congratulate them when they meet their goals, explain with various examples, reinforce content that has not been clear, give online or telephonic personalized advice, and interact with students and parents. Without neglecting students at low-risk, they should be aware of vulnerable students at the same time. Teachers should not make conclusions and predictions before knowing them. They should not stigmatize them, make generalizations, or treat them as incapable people with fewer abilities to be in the school system. The purpose of characterizing the students is to assist them and prevent dropouts. Hence, it is essential to find time for them to dive into their interest areas. Teachers should listen to their interests and, with their guidance, give them the freedom to explore topics that are alluring for them and share their expertise in issues that would enrich their classmates.

Teachers should establish consistent one-on-one contact with students and families. Families' involvement is central in the academic achievement of children, as well as their attitude, behavior, and social adjustment. Parental involvement is vital because students feel that their education is relevant. The parents are knowledgeable partners that, to the extent possible, can facilitate moral and material resources and spaces that students need, can assist with their homework, and discuss with the teachers their children's academic, emotional and social strengths and weaknesses to support them. That way, teachers and school administrators understand their students better and raise their chance to make reforms and adjustments that fit them.

Teachers should make their students know that they care for their welfare as human beings and that they are always welcomed in the online learning platforms; that way, they would not feel alone in their online work. Learners need to perceive that they have the teachers' support. In online education, teachers should be more flexible in time and resources. It is recommended that they open communication lines, be available for the learners, be willing to listen to their academic and emotional concerns, give advice, and let students know they matter and are missed. Straightforward actions such as sending personalized texts, e-mails, or personal calls help students feel appreciated. They also get to see that they count on their attention.

In a respectful way in which K-12 students feel comfortable and confident, teachers should ask them about their feelings about online learning, their experiences their interests, their family adjustment, their economic situation, their responsibilities at home, the positive and negative elements that they have found out in online learning. Analyzing this information, teachers can provide personalized instructional support to students to reinforce topics and structure assignments to address their challenges. They can advise students and talk to their families about their situations and the strategies that they should use to the betterment of the students' academic online experience, as well as suggest them to have an appointment with the school counselor so that they receive specialized psychological support. Finally, as many K-12 students rely on schools to fulfill their nutritional requirements, teachers should offer information about the school meal distribution points and the community groups that provide social service.

2.2 Strategies to self-regulate and concentrate

Self-regulation is a process that involves learners in their cognitive function and makes them think about how they learn. This is an active and constructive process in which the main actors are the students. It is imperative to train students in this

area because societies need autonomous, proactive, and innovative people who can respond resiliently to crises or prosperous situations since the future is unforeseeable. Self-regulated students tend to thrive academically and are more optimistic about their future. They are always advancing and acquiring new skills, are goal-directed, can develop the power to teach themselves, evaluate their work through reflection, establish realistic and ambitious goals, and attain them.

Teachers must help students recognize what it means to learn online in contrast to learning in a classroom. In online classes, teachers should explicitly support students and teach self-regulatory practices. For instance, teachers should ask learners about the strategies they used in traditional settings to contrast the changes they should make during their online experience that better fit their realities and contexts.

Furthermore, teachers should make their students reflect on their expectations, advantages, and drawbacks during online education. Teachers should open spaces for students to generate questions and explain to their peers the online and personal sources that have been helpful for them, which, at the same time, might be useful for their classmates.

With the aim of doing effective planning, students and teachers should work together to set clear and concise expectations for learning. These expectations might be about contents, materials, time, or behavior. When teachers and learners make agreements, both have enough information to self-assess their rhythm, decisions, and process as they perform.

Teachers should support K-12 students for appropriate pacing because, for some students, the days might blend into one another, or they may stay online for long periods, either studying or wandering over to social networks, games, and videos. To help students concentrate, teachers should propose meditation, cognitive activities, and physical exercise. For example, teachers should intentionally incorporate movement, meditation, and deep breathing into online classes. Indeed, students should alternate intensive periods of focus with deliberately planned phases of rest and self-reward. These strategies have enormous benefits to cognitive functioning and wellbeing, especially on days of anxiety, boredom, uncertainty, or sedentariness.

Additionally, teachers should encourage reading for pleasure and socialization of texts in class. In order to promote family time and emotional support, teachers should assign tasks that involve spending time with the family and relate these activities to the contents of the class. Some activities are: preparing and eating meals together, playing games, running, making videos together, and helping with household chores.

Teachers should propose times when students distinguish their achievements and problems during online learning and offer solutions to solve emotional tautness. In online classes, teachers should discuss with the students about their learning environment at home. Sometimes it is noisy, some families live in small spaces, and there are several distractions for students. Nonetheless, teachers should teach students that they have to be innovative and resilient. With the teachers' help, the students should reflect on designing their ideal learning and working environments. They should talk with their families and look for times and spaces where they are distraction-free for a set amount of time or until a particular task is accomplished. Teachers should convene meetings with parents to explain and make them aware that students need to give exclusive attention to academic tasks that require serious concentration. This advice intends to teach students to create schedules, fulfill them, meet consensus with their families, determine spaces, resources, and times to boost their learning. This situation is an opportunity for students to learn that life is not always smooth, and they have to be active in solving problems.

2.3 Promoting active learning in online classes

Teachers should train students to set clear expectations and stick to them. K-12 students should establish their goals because they engage with themselves, and they feel ownership over those goals. That way, they develop intense eagerness to pursue them even when they have to endure setbacks, distractions, tensions, and challenges. Are the students merely establishing goals based solely on the teachers' impositions but not on their passions, needs, and realities? In online learning, teachers should not try to dominate students' decisions but teach them to decide wisely. Through remote education, students face more autonomous learning, and they are physically distant. Teachers should harness it to teach students that they have the power to decide, surpass others' expectations, and be the owners of their learning process to excel. That way, they learn to be high-achieving students.

Teachers should follow up their students' quest in their struggle to meet their goals, asking how they are doing their process, their feelings, their academic achievement: have they discovered a new concept? Have they used their knowledge in their everyday life? Have they written reflections, essays, notes, or a diary? Teachers should advise K-12 students, encourage their progress, and remind them to keep progressing and to be aware that success is not a straight-line relation over time. For instance, they can also share videos and articles about the stories of people who overcame adversity through study, discipline, and hard work, even in the worst circumstances, and have used their achievements to help others and make social, technological, academic, and scientific transformations.

Teachers should guide students to discover their strengths, cultivate determination, and self-efficacy to accomplish objectives that are even more complex than those pre-established in the education system. That way, students go deeper into the contents and research topics that inspire them. When they do it, they persevere, keep learning, inquire, and propose. This exercise requires time and a lengthy training process. Teachers can start helping students setting goals related to their academic performance, such as the daily or weekly amount of time they will commit to studying or forming a study group with their peers to interact online, by platforms, or social networks. When students gain experience doing so, they get more curious and open to knowledge, and they can work together with their teachers to plan content-related goals to develop and discuss in class. Using this method, they are more confident to communicate, agree, disagree, make proposals, and explain the topics they would like to learn about and the activities they would like to try. It is important to underline that the students are the center of the education process, and they live in different circumstances, and not all students have the same resources. At all times, students should be able to express their opinion about their learning process, assessment, and preferences. Consequently, teachers must:

- Ask students' opinions about how they would like to run the classes and be assessed.
- Be attentive to paralinguistic – intonation, tone, volume- and non-linguistic communication- facial expressions.
- Be open to learning about students.
- Carefully listen to students.
- Give feedback about students' comments, do not interrupt them, and take the time to listen.

- Show that learners' thoughts matter to them. Teachers should not make students feel that they listen to them just because of a formality.
- Consider students' suggestions for enriching the teaching practice and the curriculum.
- Give up prejudices about the students.
- Show the students that they care about their opinion, ask questions to clarify, go more in-depth, and let students share their insights.
- Summarize the students' thoughts to clarify understanding and raise reflection.
- Use gestures to show that they are paying active attention to the students.
- Discuss the comments showing agreement or disagreement. For that means, both teachers and students should use arguments and make explanations.
- Motivate students to participate in the curriculum planning process and take their ideas into account.

Undoubtedly, when students make role-plays and simulate to be teachers, they increase their independence, creativity, and self-confidence. They reinforce their knowledge, understand better, lead, answer questions, give examples, are dynamic, express clearly, learn cooperatively, sharpen their skills, and make more detailed revisions about the material.

Sometimes K-12 students are overconfident and think that they have mastery on the topics, but it is not the reality. For this reason, it is interesting that they explain the topics to their peers. It promotes active learning, and the focus is on them, not only on the teacher. This involves students in the course content; they set new personal and social goals, and become active students. Definitely, peer teaching boosts students' engagement, knowledge, social skills, and participation.

2.4 Teachers' role

Teachers should be proactive and productive. It has to be in all spaces: in the classroom or in online asynchronous, synchronous, or blended classes. Teachers should not be mere technicians and followers of instructions. They should make proposals, accomplish their goals, and build their education vision to benefit their students. The interconnected world and the easiness of interacting online should be used to network with other teachers, researchers, and experts in multiple fields. It means that they take responsibility for their profession, are leaders, give a positive example through actions, are committed to excel their teaching strategies, are flexible, do not resist technology, reinvent education when it is necessary, and give more than they are officially required because they genuinely have the calling to contribute to their students and society.

Teachers are mediators who introduce ideas and inspire K-12 students to explore new ways of thinking on their own. In order to know what language and strategies they should use to motivate students, they should promote interactions with each group, set up video conferences with parents and students in small groups or individually, and know their experiences, thoughts, feelings, needs, strengths, socioeconomic conditions, and culture. By exploring each student's situation, they should

create and apply strategies that respond to the students' realities, promote equity, motivation, and quality of education. Effective teachers dedicate themselves to students' success and choose learning methods that accommodate all of them without making exclusions or losing students.

One of the core problems in education is that teaching is impersonal, and students are seen as "masses" who should access the same education without matter their lives and circumstances. Equity in education should be exalted. Each student should be recognized as a unique human being, and teachers should ensure students' inclusion. They have to reach the same level of skills according to their age and level of education. Still, at the same time, teachers should differentiate instruction, tasks, and resources to respond effectively to particular situations, adequate the activities for their learning styles and types of intelligence, and make each student develop their potential.

Mediocrity should be avoided, and teachers should go more in-depth and help students bolster their abilities, and eliminate stereotypes. Equity in education does not conceive gender, ethnic origin, and family background as obstacles to academic success. It looks for providing every student access to meaningful learning that drives their talents and empowers them to build their authentic points of view. Teachers should make sure that students feel valued, that their voice is significant. Regardless of their culture, gender, or socioeconomic status, they have to be active to improve their intellectual skills, discover themselves and others, value their classmates, listen to others, treat other people with dignity, and become ethical and responsible human beings and citizens.

Teachers should narrow the digital divide and make online learning accessible and equitable. Furthermore, they should conduct a needs analysis to find out the students' technical capabilities. It is imperative to notice that each school is a universe, and each student endures different realities. Before proposing tasks, teachers should consider the technological contexts of the participants. They have to evaluate if students have a stable and fast Internet connection for watching videos, videoconferencing, and playing. In fact, low Internet connection or difficult access to technological devices might cause fatigue in students. Teachers should not overwhelm students with excessive demands because it is detrimental to learners' motivation and achievement.

Teachers should be wise to determine the right amount of content and technology required for their online classes. They should have realistic expectations about the working load that students can stand, the chance of synchronous and asynchronous connection, and the quality of feedback that students will receive. Some students can interact better in synchronous work. Others prefer to write, take the time to reflect and read. The students that do not have a fast Internet connection interact better through asynchronous tools. Teachers can support students with videos that automatically pop up, share helpful sites, such as glossaries, or question engines.

2.5 Online tasks

Teachers should ensure that online classes are dynamic and engaging without sacrificing academic quality. The tasks should focus on the students and their learning process, be clear to their language level be goal-oriented and communicative, and promote reflection.

For instance, to make discussions and debates and make the students give their opinion using critical thinking skills including interpretation, analysis, inquiries, reflections, inference, and an open listening to the replies and questions of their audience, teachers should leverage multimedia input resources that K-12 students like such as YouTube videos, Netflix documentaries, newscasts, and podcasts; as

well as reading materials such as journalistic texts, essays, opinions, and blogs. Exciting material and sources used academically with the teachers' support are means that students can use to engage in research, communication, and problem-solving. Teachers should take advantage of these resources to enable group interaction, a decisive element of effective online learning. The assignments should prompt students to practice the classes' contents in other contexts and platforms.

Teachers should use games to promote learning. They provide learning opportunities no so explored in the typical classroom where some teachers only use books, whiteboards, and paper. High-quality educational computer games can immerse and engage students in a 'microworld,' an environment artificially constructed to embody ideas and skills and offer potent tools to further the theoretical contents. By making connections with different types of objects, information, images, and concepts, and receiving immediate feedback, learners can develop a deep and practical understanding.

Teachers should involve K-12 students in social problems with the aim to make that they know the world's situations and synthesize information into real-world knowledge. Expose students to current local and international affairs is more meaningful, representative, and realistic than the tasks found in more traditional textbooks. When students solve problems, their learning is active, contextualized, and practical, going far beyond the sole reproduction of disciplinary content. Indeed, in online education, teachers should rescue problem-solving, autonomy, and collaborative research. Contents should be approached transdisciplinary, making learning interesting and articulated. Teachers should help students focus on using knowledge to innovate, create new connections and proposals, and give solutions to problems in their context. When individuals develop the problem-solving ability, they respond to rapid changes through various alternatives, predict outcomes, maximize positive results, view problems as opportunities to grow, and create appropriate solutions.

2.6 The importance of self-regulation and collaborative learning

Autonomy, discipline, and enthusiasm towards knowledge are components that lead to academic success. Research on learning engagement consistently identifies engagement as fundamental for course completion and academic success. Students get discouraged in online learning when teachers include excessive amounts of homework, the tasks are too easy or too demanding, the feeling of isolation increases, and content does not meet the students' expectations. Teachers should create plans to boost students' self-regulation. When students empower in their learning process, they engage in self-motivating cycles of learning. The outcome is emotional, social, and academic attainment. Teachers should leverage online knowledge to introduce and foster the development of higher-order thinking skills and effective study strategies.

Teachers should not replicate the techniques they use in the classroom into online learning because the learning environments are different. They should take into account Bloom's taxonomy. Instead of focusing on enhancing inferior levels: factual knowledge, conceptual knowledge, and procedural knowledge, they should encourage metacognitive knowledge. Nowadays, teachers have to be proactive and creative to monitor student learning, metacognition, motivation, and online perceptions over time. Teachers who make positive differences in students exploit this knowledge to optimize their instruction. In fact, monitoring student learning is a foundational component of high-quality education and is a valuable basis to make pedagogical decisions.

Effective teachers who use a student-centered approach are likely to design lessons that meet each learner's needs. In online learning, teachers should place the

focus on the students. Teachers need to reach out and provide them with learning experiences that foster positive feelings about their progress, specific goals, self-image, and abilities.

When teachers propose collaborative technology-mediated activities, students develop positive perceptions of working in teams, and they have more opportunities for developing engagement with their peers and their learning process. Collaborative tasks are crucial components for online learning because they boost understanding, nurture relationships, foster self-esteem, lessen anxiety, stimulate critical thinking, and build a sense of community. Through collaborative learning, teachers can design teams to address learning needs, encourage students to help and support each other, ask questions, and share knowledge, learning strategies, and anecdotes related to their educational path. Collaborative activities promote unity in the diversity, exchange, richness of information, thoroughgoing engagement levels, and individual and group accountability. Collaborative learning is a consistently positive stimulus on self-esteem and human relations.

Self-regulation is how learners have the initiative to activate, alter, and sustain their learning practices according to the contents that they are exposed to, the contexts, and the circumstances. Metacognition is the knowledge that individuals have about their cognition. Teachers should teach students to develop metacognition because they become effective and active learners. They can discover and enrich their strategies, identify their strengths and insecurities, assess task goals, establish the requirements they need to reach goals, evaluate themselves, reflect on tasks, be strategic, and be flexible enough to adjust to new strategies when necessary. Self-regulation and metacognition are exceptional pillars that help students be resilient, plan, monitor, evaluate their decisions and performance, and improve their self-management and self-appraisal skills. The outcome is positive because these strategies empower their higher-order cognitive abilities, concentration, self-confidence, and meaningful learning. These skills can evolve and be useful in the present and future times.

Learning is a constructivist and interactive process, and learners should be active participants who monitor and control their motivation, behavior, and cognition. When students develop self-regulation, they have the power to motivate themselves to accomplish self-set goals and to not give up. They are creative, and they know their learning processes so clearly that they are capable of planning, establishing organizational techniques. That way, they monitor themselves and are flexible enough to change their procedures and include new strategies to make their learning process as smooth as possible. The result is that their academic performance is reliable, and they develop an eagerness for learning, making it a lifelong habit. It is paramount for students to understand that failure is an opportunity to progress and learn new strategies, develop creativity, persistence, endurance, and resilience to advance on the exciting and diverse path to success.

Instructors should guide K-12 students to set goals, monitor their progress, and make adjustments in order to be successful. For this reason, teachers should expose students to different social experiences and teaching activities that embolden them to self-monitor and control their performance. Teachers should propose tasks that require that students are autonomous and responsible for their learning process, make them face unexpected situations in which it is decisive for them to select, build, and transfer knowledge.

In online discussions or through short written-questions during and after the classes, teachers should ask students to summarize their own words and the knowledge they have attained in the session. Teachers make the learning process visible when they ask their students to explain their answers, defend their points of view, give solutions, and help their peers.

Before each task, teachers should ask K-12 students to plan goals, establish strategies to monitor their progress, self-assess, make brainstorm and express expectations about what they want to learn. Teachers should remember that students are not blank slates that need to be filled with information and modeling. When students plan out how they will tackle complex tasks, they become aware of procedures that are effective for them. It generates better learning and understanding.

Teachers should encourage students to "think about their thinking" while they are learning, interacting, and practicing. The questions are indispensable students' resources. Learning through inquiry is beneficial because it increases the students' interest and motivation. Students should tailor their learning process to fill particular gaps, be self-reflexive, identify if they are on the right track, and determine different approaches that better fit their pathway. For this reason, teachers should not pressure students to learn fast. Online learning gives the possibility of having self-paced learning and deepening moments, yet still interactive; remote education promotes student-centered learning. In many cases, students have the freedom of revising recorded lectures, have access to slideshows, listen to concepts that were not clear immediately in the synchronous part of the class, listen to recordings, and read documents, articles, messages, and PDFs.

Teachers should make their students know that it is not enough to find the right answers or memorize concepts and facts. It is of paramount importance that students discover how they are learning, why they chose an answer, what the evidence is, what they really know about the topics, what is remarkable and exciting for them, what they can use in everyday life, what their doubts are, how to use data and translate them into information and new knowledge.

Teachers should create spaces such as blogs, forums, and online discussions in which students share their learning processes, ask questions to their peers, express their strengths, weaknesses, and challenges. They can also talk about their level of confidence in the topics, what they would like to learn, how they have felt, what they have liked, and what they have disliked during the process of researching, inquiring, and learning.

2.7 Online assessment and exam wrappers

Students improve learning when teachers ask them to use metacognitive skills explicitly. Teachers should ask them to give details about their learning to engage them in comprehension monitoring activities. In assessment, teachers should use exam wrappers because the exams' importance goes beyond the results and grades. Exams should be used as learning tools, not just as assessment tools inclined to judge, classify, and rank students. Online learning is an opportunity to eradicate the false concepts that some students have towards knowledge. Some of them consider that the purpose of studying is to obtain a grade and approve a course. Evidence is that when they receive their exams, some basically check their grade, place the exam into the binders or throw it in the trash, and the learning process ends.

For this reason, teachers should train their K-12 students in the use of exam wrappers. The main goal of exam wrappers is that students become aware of their achievements, reflect on their correct, incorrect, and incomplete answers, and adapt their scholarship accordingly. Exam wrappers prompt students to reflect on how they should prepare for exams, the skills they should apply, their accurate contributions and ideas, the kind of mistakes they made, and the study habits' adjustments that will enhance their learning and preparation for their next exams and tasks. Indeed, exam wrappers address the analysis of students' positive outcomes, opportunities, limitations, performance, and behaviors. Consequently, students learn to self-assess their knowledge and self-regulate their study, positively

affecting their learning. Exam wrappers are so useful that if teachers make them a worthwhile habit in the online classes, students will value this tool and adjust it for life-long learning.

Some questions that teachers should ask students after exams are:

- How many hours did you spend revising?
- What was the effectiveness of the strategies that you use to prepare for the exam?
- What could you do otherwise in the future?
- What is your perception of your understanding before and after taking the exam?
- What mistakes did you make on the exam?
- What more effective study strategies do you think that you may apply in next time?
- How was your emotional experience before, during, and after the exam?

It is pivotal that teachers make timely and effective feedback and reflection to increase their students' progress. Wise choices, failures, and mistakes should be used to improve metacognition and learning. For instance, teachers can propose that students create rubrics and make solid comments about their peers' jobs. Through training and time, students become more independent and judge how effectively they are learning, and structure learning plans, steps, procedures, times, and spaces that are favorable to them. Teachers should show students that learning and assessment are neither stringent nor monotonous. If students understand that learning is exciting, they will feel motivated to experiment with their ideas, make suggestions to their teachers and peers, and enjoy the online learning dynamics.

3. Conclusions

Self-directed learning is a must 21st-century skill, mostly when education and society are changing and online interaction prevails. Most countries recognize that equal access to education is a right. Nonetheless, governments should provide the resources and tools that K-12 students need to keep studying. Teachers should exert their leadership to assist particular situations of the students, respond to their needs and talents, discover their learning styles and multiple intelligences, as well as identify, through the teaching practice, effective strategies specifically for their particular group of students. Teachers should adjust curricula to provide reasonable, engaging, meaningful, and valuable content to their students to apply in their daily lives, which is a great tool to prevent dropout. Therefore, they should identify out-of-school risk factors, motivate students, support them, and encourage them to be independent learners.

The most successful K-12 students set, assess, and adapt their goals according to the diverse demands across multiple contexts. Unfortunately, when students lack the ability to adjust their current approaches to more successful ones, they tend to develop apathy against learning, do not analyze, and do not boost critical thinking development. Instead, they focus on superficial features and ignore

underlying principles, concepts, and theories. Consequently, teachers should integrate self-directed learning and metacognitive tasks into their classroom practice or in blended and online education.

Nowadays, individuals are expected to shape their own lives, make choices, and take responsibility for their actions. Then, the current generation of K-12 students must be prepared for flexibility, resiliency, critical thinking skills, and lifelong learning. Teachers should make them aware that they will have to keep acquiring new knowledge and skills throughout their entire academic and professional career. Therefore, teachers should help students develop their ability to be autonomous learners by giving them choices and responsibility to perform active roles and be involved in their learning process. Teachers should enhance students' skills to build connections with their families and open the doors to have fruitful learning experiences in which students make presentations, solve problems, communicate, discover the learning strategies that work for them, make changes when necessary, research, propose, debate, take responsibilities, lead, and collaborate with others. That way, students have multiple opportunities to develop meaningful learning, academic eagerness, self-confidence, reflexive practices, as well as the skills to foster lifelong learning no matter the environment that they endure because their motivation and knowledge are robust.

Conflict of interest

The author certifies NO affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

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