

MALAYSIAN ELEMENTARY LEARNERS' SELF-REGULATION, MOTIVATIONAL BELIEFS AND LEARNER CONTROL MOTIVATION WHEN EXPERIENCING ONLINE TUTORIALS

Dr. Min Hui LEOW

ORCID: 0000-0003-4347-4663
Academy of Language Studies
Universiti Teknologi MARA
Penang, MALAYSIA

Dr. Rafiza ABDUL RAZAK

ORCID: 0000-0002-1604-7781
Faculty of Education
University of Malaya
Kuala Lumpur, MALAYSIA

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ABSTRACT

Online learning is emphasised in the 21st century curricula as one of the efficient instructional practices that improves the learning ownership of contemporary learners. A key factor in ensuring success in learners' online learning environments is the implementation of learner control. Learner control motivation is influenced by multiple interconnected beliefs and learner-directed learning practices. This study focuses on self-regulation strategies and motivational beliefs in the context of post-pandemic online tutorials. The aim of this study was to discover the influence of self-regulation strategies on learners' motivational beliefs, and the impact of learners' motivational beliefs on their learner control motivation when experiencing online tutorials. This study comprises 14 learners (age 9) from a Malaysian elementary school. Qualitative case study methodology was employed, using interviews and observations. The results of this study revealed a significant relationship between self-regulation and motivational beliefs in order to comprehend learners' motivation for learner control when experiencing online tutorials. The results drew attention on self-regulation strategies to guide online instruction that underpins learners' motivational beliefs and enhances learner control motivation.

Keywords: Online tutorials, learner control, self-regulation, motivation, elementary education.

INTRODUCTION

The 21st century curriculum reflects a global shift in education. Learners become engaged individuals who are fully responsible for their knowledge acquisition; in addition, their self-realisation of potentialities is critical to the development of educational system. According to Fadli and Irwanto (2020), learner-directed learning is more salient than learner-centred learning in today's education, in which learners are expected to regulate their own behaviour by engaging in different learning activities that correspond to their personal learning preferences. Hence, learners have been given more control over the knowledge they desire to learn and master by taking the initiative to determine their learning needs, set learning goals, identify and make use of resources, select and apply suitable learning strategies, and evaluate learning outcomes (Knowles, 1975). This situation instils a sense of purpose into the learning process which eventually brace the "learner control" initiatives in the modern learning circumstances.

Learner control is an expression of self-direction and have similar idea to ownership in terms of the ability of individuals to make their own decisions regarding learning strategies, sequence, or pace based on their own interests and preferences (Buchem et al., 2011). Giving learners the freedom to take control of their learning means allowing them to participate in the process, which is essential for the learning process to be effective.

The dimensions of learner control include the control of learning objectives, activities, rules, materials, tools and resources, social environment, tasks, and evaluation criteria (Buchem et al., 2011; Valjataga & Laanpere, 2010).

Many methods of technology-based learning highlight learner control as a fundamental principle of effective learning; learner control becomes one of the main areas of research in the field of technology-based learning. For example, Buchem et al. (2020) emphasised the crucial integration of ownership, learner control, and self-regulated learning into technology-based learning with focus on e-portfolio practices; Schroeder et al. (2020) indicated that learner control can be beneficial in aiding learners to learn from instructional videos; Rajagopal et al. (2020) suggested the significance of learner control to be implemented in digital personalised learning; and so on.

Today's instructors favour bridging the gap between physical and virtual learning for increasing learners' self-direction in learning (Adinda & Marquet, 2018). The pandemic crisis has sped up the shift from physical classroom instruction to virtual learning. Technology has developed into a crucial instrument for solving crisis-related issues. Online tutorials that encourage learners' self-learning and interaction have been created as a result of the conventional learning concept's innovation (Chatpakkarattana et al., 2022). The online tutorials are frequently supported by the use of digital tools, materials, and resources. For example, Google Classroom is a practical tool that invites learners to participate actively in knowledge exploration, discussion, creative thinking, and problem solving (Izwan Nizal Mohd Shaharane et al., 2016); materials for gamification drive learners' engagement and motivation with personalised learning and providing constructive feedback based upon assessments or evaluations (Welbers et al., 2019); extensive resources and useful brainstorming tool encourage collaboration from distance (Panagiotis & Triantaphyllia, 2020); and so on. Online tutorials therefore boost learners' digital competency by allowing them to independently discover information, participate in digital learning activities, and share and discuss ideas with peers on digital learning platforms (Alkahtani, 2019). As a result of the education modernisation, the idea of learner control has been raised to examine how children's learning may be used to nurture this ability.

However, it can be challenging for learners to assume their learning responsibilities if they lack the maturity, self-awareness, self-reflection abilities, and sufficient cognitive resources required for demonstrating learner control. In the Malaysian context, during the "panicgogy" application throughout the COVID-19 pandemic, the young learners significantly underperformed in controlling and directing their own learning when experiencing online tutorials, in which elementary level learners need a lot of hands-on coaching and constant supervision (Kanyakumari, 2020), and they hardly manage their works independently (Wan, 2020). Since maturity is a trait that distinguishes adults from children, young learners' levels of learner control are expected to be lower than those of adults (Hauk & Groschner, 2022), regardless of the pandemic crisis's impact. Prior to the epidemic, studies had already shown that young learners habitually relying on teachers' guidance and ritual learning schedule during technology-based learning (Mohd Fadzly Wasriep & Lajium, 2019). Moreover, young learners often lack self-motivation and self-discipline to learn actively and independently in the technology-enhanced learning environment (Lee, 2019). In short, the motivation of young learners to demonstrate learner control in a technological learning environment is depending on their abilities for self-regulation, since self-regulation is a process by which an individual tries to consciously manage his/her behaviour or reaction tendency in order to achieve a specific goal (Baumeister et al., 1994).

Undeniably, learners have practiced self-learning and ownership initiatives in a multitude way during the pandemic, and the new educational system is compelled to conform to post-pandemic teaching and learning environment. Considering what we have learnt from the pandemic, the significance of abilities for self-regulated learning became more apparent (Berger et al., 2021). It is essential to recognise self-regulation as an important educational ability for learners' learner control performance and motivation. In light of this, Werner and Milyavskaya (2018) proposed that future research should consider the strong relationship between motivation and self-regulation. In addition, according to Code (2020), learners' ability to control and monitor their own learning depends heavily on motivation and self-regulation. In another case, self-regulation can be predicted by learners' motivational beliefs (Bai & Wang, 2021). Previous research mostly discussed about the impact of motivational beliefs on self-regulation (e.g., Adel & Hussain, 2020; Teng, 2021); however, this study discussed on the inverse relationship between motivational beliefs on self-regulation. It seems that no research has so far investigated the relationship between learner control

motivation, self-regulation, and motivational beliefs in the context of online tutorials. Furthermore, this study focused on investigating the post-pandemic modulation in Malaysian elementary school online learning concerning elementary learners' learner control motivation when experiencing online tutorials, which is still understudied at present.

PURPOSE OF THE STUDY

This study aimed to discover the influence of Malaysian elementary learners' self-regulation strategies to their motivational beliefs, and the impact of learners' motivational beliefs to their learner control motivation when experiencing online tutorials. In short, this study sought answers to the following research questions:

- a. How do elementary learners implement self-regulation strategies when experiencing online tutorials?
- b. Which motivational beliefs are being underpinned by self-regulation strategies?
- c. How do motivational beliefs significantly impact learner control motivation when experiencing online tutorials?

THEORETICAL BACKGROUND

Motivation

Online learning research emphasises the importance of motivation in accomplishing educational goals (Hartnett, 2016); same goes to online tutorials research, which views motivation as a crucial aspect that determines learners' quality of learning (Sugilar, 2021). Motivation gives people the desire to act and fulfil their needs or pursue a specific goal. In other words, motivation is described as the process that initiates, drives, and sustains goal-oriented behaviours (Brophy & Wentzel, 2014). From theoretical aspect, motivation is a theoretical concept that used to explain human behaviour. There are a variety of motivational theories that are pertinent to learning, such as intrinsic and extrinsic motivation theory, social cognitive theory, self-determination theory (Deci & Ryan, 2010), ARCS model (Keller, 1983), and expectancy theory (Vroom, 1964).

In relation to this study's focus on learner control, motivation concept pertains to intrinsic and extrinsic motivation theory, social cognitive theory, and self-determination theory. Learner control demonstration in technology-enhanced learning environments typically rely on intrinsic motivation, associate with self-efficacy and self-regulation (Siddiqui et al., 2020). However, there is a substantial positive association between intrinsic and extrinsic motivation, but not an opposition (Takahashi, 2018). According to Bandura's (1986, p. 18) social cognitive theory, "people are neither driven by internal motives nor automatically controlled by external stimuli; rather, human functioning is operated in which behaviour, person, and environment factors interrelating among each other". Hence, learning motivation needs affiliation of both internal force and external stimuli. Ryan and Deci (2000) defined that intrinsic motivation refers to engaging in an activity for the intrinsic satisfaction of the activity itself; extrinsic motivation refers to engaging in an activity in order to achieve a distinct goal. Both intrinsic and extrinsic motivation have the capacity to enhance learning outcomes (Zhou et al., 2021). Evolve from intrinsic and extrinsic motivation, self-determination is defined as acting with a sense of choice, volition, and commitment (Deci & Ryan, 2010); whereas learner control is associated to self-determination (Ryan & Deci, 2000).

Motivational Beliefs

Although motivational beliefs are considered as predictors of self-regulation (Bai & Wang, 2021; Teng, 2021), this study believes that there is an inversed relationship between motivational beliefs on self-regulation. Among the variety of motivational beliefs, self-efficacy, instrumental value beliefs, and goal orientation were specifically examined in relation to self-regulation (Pintrich, 1999). The social cognitive theory put out by Bandura (1997) emphasises the significance of perceived efficacy. Self-efficacy has been described as an individual's perception of his/her capacity to organise and execute actions that result in the accomplishment of a particular goal (Bandura, 1986). Learners' methods for controlling their cognition are referred to as self-

regulated learning. Therefore, using cognitive and metacognitive strategies to achieve a goal can be attributed to high levels of self-efficacy. For example, when learners make regulation on their decisions and judgements while learning, they see progress from trial and error, which eventually affects learners' self-efficacy regarding their capability and motivation to keep learning.

Instrumental value beliefs refer to how learners value various learning instruments, such as tasks, materials, or resources. Instrumental value beliefs impact cognition and motivational controls, in which learners may be motivated to learn when given an instrument that he/she finds important, engaging, and valuable (Pintrich, 1999). Conversely, learners see progress towards their goals when regulating or managing the use of resources; if they discover that there is a slow or ineffective progress from what they are controlling, it affects learners' beliefs about the instrument and reduces their motivation to learn. Goal orientation defines how learners perceived the reasons for participating in a learning task (Pintrich, 1999). This study lays focus on performance goal orientation (demonstration of learning ability), learning goal orientation (perseverance of learning), and performance-avoidance orientation (avoid failure) proposed by Yokoyama and Miwa (2018), based on intrinsic and extrinsic learning initiatives. Goal orientation is a key aspect in determining how learners regulate their learning, and goal orientation in turn is influenced by self-regulation. For instance, learners are internally motivated to achieve their goals, which motivates them to regulate or control their cognition and motivation; however, the manner in which they regulate their learning may influence their tendency for different kinds of goal orientation.

Self-Regulation

Self-regulation refers to the methods that learners employ to control their cognition processes, including their use of cognitive (e.g., selecting, managing/organising, executing) and metacognitive strategies (e.g., planning, monitoring, evaluating) (Pintrich, 1999). Moreover, when exhibiting learner control, volitional strategies can also be used to regulate important aspects of the learning process, such as control of selective attention, encoding, affection, motivation, environment, and information processing (Kuhl, 1985). Hence, volitional control is required to support and maintain one's intention until the goal has been accomplished; it is one of the key strategies for regulating learners' learning motivation, especially when learners are learning from distance (Keller et al., 2021). Therefore, in this study, along with cognitive and metacognitive strategies, volitional strategies are included as one of the components of the self-regulation strategies to be discovered in elementary learners' learner control demonstration. However, this study only looks into learners' volitional regulation of affection (emotions or feelings) because affection is frequently correlated with learners' beliefs of their control over the learning and positive affection may have favourable impacts on learning motivation (Pekrun, 2000).

This study adopts the stance that self-regulated learning, motivation, and motivational beliefs should all be investigated as components of a cohesive whole. Self-regulation guides learners to be active participants in their own learning processes so that they take the initiative and control their own learning motivation. It is critical to discover the relationship between self-regulation and motivational beliefs in order to comprehend learners' motivation for learner control when experiencing online tutorials.

METHOD

Research Design and Setting

Apart from implementing learner-controlled instruction under classroom setting, online tutorials are implemented concurrently in Malaysia education system to adopt technology usage in conventional learning situations in form of flipped learning or blended learning. This study deliberately discovered learners' learning situation regarding their learner control demonstration only in the online setting. For further information on the study's setting, the online learning platform was equipped with a variety of learning materials and resources that braced online tutorials. The materials and resources distribution were sequentially arranged from simple to complex, some of the items even had a self-evaluation feature. It allowed learners to take responsibility for their own choices and decisions in order to meet the learning goals.

The purpose of this study was to investigate the relationship of learners' self-regulation, motivational beliefs, and motivation from their learner control experiences in the context of online tutorials. Hence, this study needs method that would allow for discovery. Merriam's (2009) qualitative case study methodology was employed because it is a particularly appealing research design for education to obtain holistic and in-depth description of an experience.

Participants

A school that undergoes the School Transformation Program 2025 (TS25) with support from the Malaysian Collective Impact Initiative (MCII) for 21st century and active learning training was purposefully chosen. 14 Year 3 learners with performance levels ranging from 3 to 5 (with a maximum performance level of 6) were selected to take part in the study. Only learners within the performance levels range were chosen because they represented the average group of learners; learners who scored below 3 may experience learning difficulties, while learners who scored over 5 may lead to difficulty in generalising the study results. According to the demographic information about participants in Table 1, distribution of male and female learners was balanced to encourage generalisability. Inclusion criteria were they undergone educational transformation, received 21st century and active learning training program initiated by school, and expressed a willingness to participate. These participants were expected to embrace learner control skills and inevitably contribute rich data to this study. The required number of participants were depending on when saturation was reached.

Table 1. Participants' demographic information

Participants	Gender	Performance level	Age
Yik	Female	3	9
Cloe	Female	3	9
Jiang	Male	3	9
Jing	Female	3	9
Min	Male	3	9
Kang	Male	4	9
Sen	Male	4	9
Jerry	Male	4	9
Annie	Female	4	9
Eli	Male	4	9
Matt	Male	5	9
Mad	Female	5	9
Chris	Female	5	9
Yin	Female	5	9

Data Collection and Analysis

Merriam (1998) offered comprehensive instructions for qualitative case study data collection procedure by suggesting the necessity of conducting attentive observation, effective interviews, and detail mining of documents. This study conducted observation and semi-structured interviews for data collection.

The observation procedure in this study did not use checklist or formatting, but “free writing” to record any meaningful event that were likely to answer research questions over the period of the three-month investigation, such as participants’ verbal and nonverbal expressions, actions and reactions, interactions, and contextual influences. The researchers recorded as much data as possible, free from pre-determined time until saturation of information was reached (Merriam, 2009). To avoid the arisen of sensitivities of participants being watched, the researchers informed the participants that observations will be carried out during the study but did not inform participants when and how long will it takes.

Semi-structured interviews were conducted with the participants after observations to cross-check the data collected from subjective aspects; follow-up questions were addressed, if necessary, to get additional information from the participants. Participants were asked to attend audio-visual interviews scheduled for approximately 45 minutes (duration depends on time-paced, semi-structured interview questions, and syllabus) and were conducted in participants’ native languages. Interviews were recorded with interviewees’ permission for later transcription and analysis. In short, the interview procedure followed Merriam’s (1998) case study interview protocol: ask insightful questions, use probes, create an interview guide, interact effectively with the respondents, record the interview, and analyse the data.

A thematic analysis was used to interpret codes, generate categories, and construct themes. It was designed to ensure triangulation and interpretative validity. Initial coding was done in parallel with continual reflection, with a focus on making sure the data could answer the research questions. This study used the code mapping technique (Saldana, 2015) to generalise code patterns and categories in order to clearly demonstrate each code’s connection. As a result, the most common or significant codes that generate the most important categories were displayed. By rigorously examining the meaning of units within the holistic context, central themes were determined. The researchers analysed the themes, and it came up with a general description of the case. Eventually, the researchers interpreted the meaning of data and advanced themes description into a qualitative narrative.

The Scale

Ethical consideration was taken into account during the course of the investigation. This study obtained formal approval from the Educational Planning and Research Division (EPDR), Ministry of Education (MOE), and District Education Department. Informed consent was obtained from the school principal, participants, and participants’ parent(s)/guardian(s) prior to the study. To strengthen the credibility and transferability of the results, the researchers also provided a detailed explanation about the method of participant selection and the procedure of data collection and analysis.

The qualitative construct validation of the observation and interview protocols was done by a team of experts (experts in the subject matter and experts in measurement). Since the “free writing” observation protocol is a data-gathering method that heavily relies on subjectivity, observation experts advised the researchers to undertake long-term repeated observations to establish a fixed trend. Instead of relying solely on observations, more than one data source should be employed, such as interviews. For the interview protocol’s validation, experts in the subject matter reviewed the interview questions pertaining to its language, wording, and relevance. Validity was established due to the short, hints-filled questions that lack academic jargon and are basic enough for children to understand. Besides, a close reading of an interview protocol was done by experts in measurement, examining the protocol for structure, length, writing style, and comprehension. Such a panel evaluated the interview protocol to check for proper substance, questions that connect to the study’s focus, questions that are missing, and questions that are inappropriate. The experts evaluated and provided confirmation on the appropriateness of the procedures in terms of encouraging positive engagement, maintaining the flow of conversation, and stimulating the subjects to share their experiences and thoughts. Respondent validation was used to make sure that interview data was reliable. Participants were provided with a copy of final version of study reports and asked to verify correctness, clarify discrepancies, and further remark on the inquiry.

On the other hand, a pilot study was conducted as an assessment of transferability (reliability) in order to make sure that the information gathered from the questions asked was consistent and repeatable. The pilot study did not enrol the same participants as the main study in order to prevent participants from losing

interest or might influencing the results of the main study. Two participants who met the same selection criteria as the participants in the main study were selected. After conducting a pilot study, it was determined that the research approach and protocols were found to be feasible for application in a larger scale study (main study).

RESULTS AND DISCUSSIONS

Self-regulation Strategies

Cognitive Control

The intentional selection of ideas and behaviours based on task requirements, goals, and learning or social context is known as cognitive control (Miller & Cohen, 2001). Piaget asserted that young learners have a fundamental mental structure on which all subsequent learning and methods of knowledge acquisition are based (McLeod, 2018). Therefore, elementary learners' learner control was facilitated by explicit instruction which was dynamically assigned from top to down (Zhu et al., 2019). Consider the following situation:

I always follow the instruction and start to learn from the first one...I will be confused if I do number two, then go to number three, and go back to number one. (Kang/Interview/219)

Learners regulated their learning based on sequential instruction that served as fixed and directive scaffold that provide learners procedural and conceptual assistance as they pursue their learning goals. Learners believe that explicit directions or distinct cue ensure them to “stay on task”.

Certainly, when learners managing their learning materials, resources, or tasks, they usually progress from simple to complex in that order, then move on to more advanced exercises. In certain cases, the learners' sequential learning arrangement was based on the measurement of task value rather than in sequential level order. Consider the following situations:

I will start with the main task first since it is the compulsory task to be accomplished in the lesson...I then move on to other work, which is additional work for the lesson. (Sen/Interview/251-255)

Sometimes, learners' regulation of works was based on their action-in-context. For example:

If there are only three learning materials to refer to, I will work on the task and the learning materials simultaneously. If there are many learning materials that need to be referred to, I will finish referring to all of them before starting a task (Sen/Interview/337-338)

Although learners occasionally showed difficulty in making selection among a variety of materials such as “my brain doesn't know which one to choose” (Annie/Interview/211), the ability to control, master, or reschedule learning activities was fully demonstrated by learners throughout online tutorials. The results showed that learners have diverse regulatory strategies depending on the situation, as well as having personal orientation to control and organise their own behaviours or actions.

Froiland (2021) suggested that learning goals aid in boosting learners' motivation for ownership. To attain the learning goals, learners chose and evaluated the worthiness of various activities that would ensure them to achieve learning goals, which is quite similar to the “best-worst scaling” decision-making method proposed by Rogers et al. (2021). For example:

I won't make reference to the learning materials that I haven't gone through because I have already finished my task...I am aware that referring additional resources will help me learn more, but I still have a lot of works to do...Maybe I will refer to some of them later. (Mad/Interview/127-140)

Consequently, during self-regulation, learners paid less attention to the extraneous content but focused more on germane content.

Online instruction gives learners the freedom to learn at their own pace without having to follow static sequencing lessons. Thereby, learners comprehend the concepts by adjusting the information's flow to their cognitive needs as well as regulating the rate of incoming information. Studies presented that the control of learning time is closely connected with normative item difficulty, in which learners devoting more time to difficult items than easy items (Hoffman-Biencourt et al., 2010; Tullis & Benjamin, 2011). Consequently, in this study, some learners deliberately extended their learning time in order to complete the tasks and catch up with others; some learners, who were typically learning in a faster pace or advanced learners completed their learning in a shorter period of time.

Besides, learners' control over the learning environment demonstrates their social rights within the context (Makuch et al., 2020). Consider the following situation:

When something is a little unclear to me or is too challenging for me, I will do it with my friend. But if I learn on my own, that means I know how to do it properly and more effectively by myself. (Matt/Interview 02/48-50)

Online learning environment lack of distinguishing space which would naturally encourages collaboration (Clinton & Wilson, 2019). Therefore, learners self-regulated their learning behaviours to accommodate the online learning social environment. As highlighted in Stengelin et al.'s (2020) study, if a task does not necessarily require involvement of others, they prefer to learn alone. In short, learners committed to self-regulation and demonstrated their learner control abilities by being exposure to a variety of "opportunities" (Chacon-Diaz, 2020) when experiencing online tutorials.

Metacognitive Control

If learning is a cognitive process, whereas metacognition is the technique of observing or monitoring how a learner learns and applying the feedback loop for the regulation of his/her cognitive process (Jia et al., 2019). John Flavell (1979) proposed two categories of metacognition: metacognitive experience and metacognitive knowledge. Metacognitive experience allows a learner to monitor and evaluate while controlling cognitive processes; metacognitive knowledge relates to a learner's awareness of his/her capabilities, nature of the task, and the method that needs to be used to perform a task.

From the perspective of metacognitive experience, self-evaluation appears to be useful to improve learners' learning behaviour when learners make a critical judgement on their learning process, motivation, beliefs, plans, and outcomes (Van Loon, 2018). For example:

The quiz will reveal how many questions I answered incorrectly...I will try it again if I have got some answers wrong. (Min/Interview 01/502)

Research have shown that digital games give learners the chance to experience and actively or critically reflect on their learning (Altanis & Retalis, 2019; Felix et al., 2019; Luu et al., 2020). In this study, it was discovered that learners were actively participating in game-based quizzes for self-checking and self-correction. Since self-evaluation is a process by which learners understand the occurrences so that they learn from mistakes and failures (Andrade, 2019). Learners in this study re-adjusted their learning in response to the quizzes scores that indicated their mastery level of specific knowledge. In fact, cognitivism and constructivism are the two main theoretical foundation used in play or game-based learning (Bhagat et al., 2018); the game-based quizzes encourage learning by exposing learners to new experiences of mental activity in terms of play (Vygotsky, 1978).

From the perspective of metacognitive knowledge, learners' behaviour can change the instructional environment with different forms, outcomes, and efficiencies, which consequently leads to differentiated learning. It is a fact that information can be acquired both actively and passively (Wasik et al., 2006). Learners' initiatives of "active" and "passive" were regulated according to personal learning needs in order to properly utilise the learning resources. For example, the entire social environment appears passive, as if learners only read, listen, see, look, or watch at the learning materials and gain information solely; when comes to another

stage of learning, learners switch passive mode to active thinking, doing, and even communicating. The uniqueness of learner control when experiencing online tutorials was completely demonstrated by learners' self-regulation in carrying out "active" and "passive" initiatives.

Volitional Control

The ability of an individual to initiate actions according to internal decision and motivation rather than external stimuli is known as volition (Haggard & Lau, 2013). In this study, learners performed volitional control of emotions and feelings triggered by a heavy workload or environmental stress. It was a cognitive process which helped learners to develop positive learning habits that allowed them to sustain or increase their enthusiasm in learning. The findings of this study were supported by Takahashi (2018) who indicated that elementary learners' learning motivation is highly affected by anxiety-based, unwillingness-based (fulfil other peoples' needs), and rewards or praise-oriented influences. For instance, learners occasionally experienced anxiety when given freedom to make choices as though they felt insecure in the absence of clear guidelines or rules. One of the participants regulated anxiety by controlling learning in ordinal sequence, as shown as follows:

Negative emotions/feelings (anxiety):

I worry because I am not sure of which material should I refer to. (Matt/Interview 02/123-125) →

Volitional control (ordinal sequence):

As I take each step one at a time, I feel secure. I feel secure carrying out my work as directed. Therefore, I follow the flow setup by teacher and begin with the first item. (Matt/Interview 02/112-122)

Elaborate further on how learners regulate their anxiety, learners in this study frequently placed a high value on fulfilling teachers' expectations in order to receive rewards or praise and avoid punishment because they believe that doing so would lead to an emotionally satisfying outcome. For example:

Negative emotions/feelings (anxiety):

Some teachers are fierce. I am a little bit scared of the teacher. (Jerry/Interview/141-156) →

I am scared if I answer wrongly... I am scared if I don't know how to do... Won't teacher punish you if you do it wrongly?" (Min/Interview 01/195-200)

Volitional control (avoid punishment):

I complete the work assigned by teacher and adhere to teacher's instruction so that I can do it correctly. "I might learn something if I follow teacher's instruction," is the first thought that comes to my mind. Regardless of whether I like or dislike the work, I will complete it. (Jerry/Interview/141-156)

Negative emotions/feelings (anxiety):

I have already worked so hard, but teacher doesn't praise me. Does it mean that I am not doing well enough? Why doesn't teacher give me compliments? (Sen/Interview/523-535) →

Volitional control (rewards or praise):

I would like to approach teacher as the teacher would probably say '[Sen], you are awesome'". (Sen/Interview/118)

Positive self-talk, on the other hand, was another volitional control strategy that learners applied to regulate their negative emotions or feelings, particularly when they fell into the pitfall of their negative self-judgment. One of the participants expressed that:

Negative emotions/feelings (negative self-judgement):
I don't think I am awesome... I give up easily and I need other people to give me compliments so that I can move on. This makes me feel like I am annoying...I wish I could change my attitude, as if I could still be joyful even in the absence of other people's compliments. (Yik/Interview/485-490)

→ Volitional control (positive self-talk):
Sometimes, I talk to myself that "I am not bad. I am a strong kid. I will never give up". I makes me feel happier if I think in this way. Just saying to myself that "I won't quit and I am giving myself a full mark"... It seems like I am encouraging myself. (Yik/Interview/491-495)

Besides, instead of coping with distressing emotions or feelings on their own, learners occasionally approached teachers or peers when they were feeling lost or distressed. Hence, help-seeking is the social component of volitional control to regulate their emotions or feelings. For example:

Negative emotions/feelings (afraid of challenge):
I make an effort to take on the challenging task. If the task is too challenging and the teacher does not supply the solutions, I give up. (Yik/Interview/611)

→ Volitional control (help-seeking):
I have a unique method for resolving problems. It is to ask for help from someone. (Yik/Interview/141)

According to Mogavi et al. (2021), learners are easily being distracted by their surroundings because they are not used to incorporate material supportive learning, particularly during online learning. Based on the results of observation, it was discovered that learners were easily distracted by things that were more interesting or appealing around them, such as games and television, which led to a loss of concentration during a specific learning session; noises from the surroundings interfere with learners' concentration while learning in front of a computer (Story2/Observation/0:00:39CVT4 - 0:07:15CVT4). Nonetheless, it was discovered that learners could control themselves from distraction and retain their attention on learning, such as:

Matt stops learning. He keeps staring at something that appears to be distracting him from his learning. After a while, he shakes his head and turns his attention back to the computer screen where he is working. He also writes occasionally. (Story2/Observation/0:01:21CVT4 - 0:02:00CVT4)

Motivational Beliefs that Underpinned by Self-Regulation Strategies

According to this study, learners' motivational beliefs about demonstrating learner control when experiencing online tutorials were underpinned by the employment of self-regulation strategies. Self-efficacy, instrumental value beliefs, and goal orientation were three motivational belief dimensions that this study found to be significantly correlated with self-regulation strategies (Pintrich, 1999). This indicates that learners' use of self-regulation strategies is more likely to have increased motivational beliefs; or conversely, self-regulatory failure is more likely to have decreased motivational beliefs (Molden et al., 2016). Details are shown in Table 2.

Table 2. Relationship between self-regulation strategies and motivational beliefs

Self-regulation strategies		Correlated motivational beliefs	Motivational beliefs resulted from successful self-regulation	Motivational beliefs resulted from self-regulatory failure
Cognitive control	Sequential learning	Goal orientation (performance-avoidance orientation)	Belief in achieving learning goal	Confusion in achieving learning goal
	Action-in-context	Self-efficacy	Belief in taking control over learning	Belief in a lack of one's regulatory abilities
	Best-worst scaling	Goal orientation (performance goal orientation)	Belief in demonstrating learning ability	Slight awareness for learning goal orientation
	Comparing task level and value	Instrumental value beliefs	Belief in one's capacity to acquire knowledge	Low capacity belief to acquire knowledge
	Balancing pace and time	Self-efficacy	Belief in taking control over learning pace and time	Belief in a lack of one's pace and time regulatory abilities
	Regulating social/learning environment	Instrumental value beliefs	Belief in the sensible application of learning tasks	Belief in a lack of social/environmental regulatory abilities
Metacognitive control	Self-evaluation	Self-efficacy	Belief in one's learning capability	Poor self-understanding and self-expectation
	Regulating active and passive initiatives	Goal orientation (learning goal orientation)	Belief in one's preferences in achieving learning goal	Low credence to regulate one's preferences in accordance to learning goal
Volitional control	Regulating negative emotions/feelings	Self-efficacy	Increase self-confidence and enthusiasm for learning	Decrease self-confidence and enthusiasm for learning

Relationship between Motivational Beliefs and Learner Control Motivation when Experiencing Online Tutorials

Intrinsic Motivation: Self-determination Perspective

It was found that elementary learners are more likely to possess a high level of self-determination to take control over their online learning. Self-determination relates to human nature that promotes intrinsic motivation (Martela, 2020). In response to the third research question, motivational beliefs significantly impact learners' self-determination. Consequently, learners' intrinsic motivation for learner control when experiencing online tutorials may increase or decrease depending on their motivational beliefs. To further elaborate Table 2, Table 3 shows excerpts from research findings that indicate the impact of motivational beliefs on learners' intrinsic motivation.

Table 3. The impact of motivational beliefs on intrinsic motivation

Self-regulation strategies	Motivational beliefs resulted from successful self-regulation	Increase intrinsic motivation (Samples of excerpts)	Motivational beliefs resulted from self-regulatory failure	Decrease intrinsic motivation (Samples of excerpts)
Sequential learning & anxiety control (ordinal sequence)	Belief in achieving learning goal Increase self-confidence and enthusiasm for learning	Increase motivation to learn from simple to complex information in order to achieve learning goal: <i>I refer the materials from one until ten before doing the task...so that I can learn more things from every learning material, from the beginning to the end. (Matt/Interview 01/155-162; Annie/Interview/182-186)</i>	Confusion in achieving learning goal Decrease self-confidence and enthusiasm for learning	Decrease the motivation to rationally measure the probability of achieving learning goal: <i>I was like, "I choose this one lah!" I don't care if it helps my learning or not. I just simply choose one. (Yin/Interview 01/334)</i>
Action-in-context & balancing pace and time	Belief in taking control over learning [pace and time]	Increase the motivation for self-directed learning: <i>Free to choose means I can select between A and B. I will look at both to see what the differences are...I like to choose by myself... I dislike when teachers instruct me that I must complete this task first, this task second, and this task third...Teacher's suggestion is reasonable, but I just don't like being ordered around...I won't lose my temper and I will be happy if nobody is controlling me. (Yik/Interview/282-300)</i> <i>Increase the motivation to learn and go beyond pace and time constraints:</i> <i>I will go back to look at other learning materials after finished the task... because I want to see if there is anything further I can learn. (Eli/Interview 01/168-171)</i>	Belief in a lack of one's [pace and time] regulatory abilities	Decrease the motivation for self-directed learning: <i>I don't like it because I have to figure out by myself what should I do with this task and what should I do with that task. (Min/Interview 01/75-76)</i> <i>Decrease the motivation to adjust learning actions in accordance to suit individual learning pace and time:</i> <i>I don't really enjoy it. I have finished my work. I have nothing to do. So, I do nothing and just sit there. (Eli/Interview 02/60)</i>
Best-worst scaling & comparing task level and value	Belief in demonstrating learning ability	<i>Increase the commitment to performance goal orientation:</i> <i>I will keep working on the compulsory task even surpass the timeframe if I haven't completed it... I might access to additional learning materials after I have completed the compulsory task...but only within the one-hour timeframe. (Jerry/Interview/165-172)</i>	Slight awareness for learning goal orientation	<i>Decrease the commitment to learning goal orientation:</i> Sometimes, I get too lazy to access further learning materials or to refer back to the ones that I have already learnt because I have finished my works... regardless of whether I have time or not. (Min/Interview 02/240-261)

Self-regulation strategies	Motivational beliefs resulted from successful self-regulation	Increase intrinsic motivation (Samples of excerpts)	Motivational beliefs resulted from self-regulatory failure	Decrease intrinsic motivation (Samples of excerpts)
	Belief in one's capacity to acquire knowledge	Increase the motivation to acquire new knowledge: I can learn more efficiently and successfully if the task is at a normal level...I choose to learn with the normal level task because the one that is too simple is the one that I have already mastered...I consider it as a revision. There is something that I never learnt before in the normal level task and I can gain new knowledge from it. (Jerry/Interview/295-317)	Low capacity belief to acquire knowledge	<i>regardless of whether I have time or not. (Min/Interview 02/240-261)</i> Decrease the motivation to acquire knowledge from challenging task: <i>The task that I am unable to solve...I decide to give up due to the difficulty. I would rather quit. (Jerry/Interview/352-368)</i>
Regulating social/ learning environment & regulating active and passive initiatives & anxiety (help-seeking) and distraction control	Belief in the sensible application of learning tasks Belief in one's preferences in achieving learning goal Increase self-confidence and enthusiasm for learning	Increase the motivation to manage the independent and collaborative learning: <i>Sen has completed the first task on his own. Sen requests Matt to pair up with him so that they can help each other to complete another task. Along with Matt, Sen completes his task successfully. After that, they both continue their independent learning. (House 3/ Observation/0:23:14VT-0:36:30VT/June 4, 2020)</i>	Belief in a lack of social/ environmental regulatory abilities Low credence to regulate one's preferences in accordance to learning goal Decrease self-confidence and enthusiasm for learning	Decrease the motivation to manage the interpersonal or intrapersonal initiatives: <i>It is different from in-class learning. When I conduct the online tutorials, I learn by myself...I look at other people's discussion... but there is no such moment that I feel like want to talk to others although the discussion is rather necessary. I am shy. I am already used to learning on my own. (Jiang/Interview/265-349/June 25, 2020)</i>
Self-evaluation & self-judgement control (self-talk)	Belief in one's learning capability Increase self-confidence and enthusiasm for learning	Increase the motivation for self-success: <i>I am happy because I have done it all correctly... It is not necessary to receive praises as long as I can do the work by myself correctly... Self-success is more important than praise. (Jerry/Interview/404-414)</i>	Poor self-understanding and self-expectation Decrease self-confidence and enthusiasm for learning	Decrease the motivation to confront challenges: <i>I thought I am able to learn something tougher. However, when I confront with a difficult task, I feel compelled to return to something simpler. (Chris/Interview/577-583)</i>

Extrinsic Motivation: Social Cognition Perspective

According to social cognitive theory, learners' learning motivation is influenced by their experiences, other people's behaviour, and their surroundings (Bandura, 1986). According to the findings in Table 3, sometimes, learners' motivational beliefs do not fully reinforce their intrinsic motivation. Therefore, learners are more likely to seek assistance from external stimuli. Despite the fact that some learners showed strong motivational beliefs while implementing learner control when experiencing online tutorials, these beliefs would inevitably be reinforced by external stimuli, which ultimately increased their motivation to study. For example:

I feel happy to my learning even if I receive no praise, but I would be even pleased if the teacher compliments me. I will study harder and strive to perform better next time. (Eli/Interview 01/343)

There is a link between praise-oriented and intrinsic motivation in terms of strengthening or encouraging learners' learner control motivation when experiencing online tutorials (Takahashi, 2018).

Besides, when learners have low motivational beliefs, they become cautious or timid in their learning decisions. Most of the time, they would seek help from peers or teachers in order to retain their learning motivation. However, it might cause a fall back of intrinsic motivation if learners decide to rely on other people's assistance instead of completing the learning task on their own. Consider the following situation:

When I am unable to comprehend a question or when I am unsure of how to answer...I simply do a little and wait... I am waiting for the teacher's or friends' response to that question...Later, I can just write it down because I am not sure how to do it. (Min/Interview 01/402-428)

CONCLUSION AND IMPLICATION

This study highlighted the significance of learners being able to self-regulate through cognitive, metacognitive, and volitional control in order to shape desirable motivational beliefs that help learners' fully manifest learner control when experiencing online tutorials. Results revealed that self-regulation inevitably affects learners' learning flexibility and learner control motivation in online learning, in line with studies showing that effective self-regulation ensures desired attainment in online learning (Albelbisi & Yusop, 2019; Magen-Nagar & Cohen, 2016; Brittany, 2020). Additionally, this study revealed and validated the facts of the close connection between self-regulation and motivational beliefs in relation to learners' learning performance and motivation, which is consistent with previous studies (Adel & Hussain, 2020; Bai & Wang, 2021; Cho et al., 2020; Teng, 2021). Inversely, the present study's findings lend further support for previous studies which proposed that self-regulation are the underlying tenets that often predicted by motivational beliefs (Bai & Wang, 2021). This study underlined that the inverse relationship between self-regulation and motivational beliefs should not be taken for granted. The strong relationship between self-regulated learning and motivational beliefs has significantly influenced learners' learner control motivation when experiencing online tutorials, showing that it is the most notable contribution of the present study to the related research field.

This study showed that successful self-regulation contributes positively to motivational beliefs in terms of self-efficacy, instrumental value beliefs, and goal orientation; otherwise, vice versa. This suggests that learners who are able to well correlate self-regulation strategies with motivational beliefs are intrinsically motivated to take ownership of their learning, have confidence in their capability to accomplish goals, have better self-understanding and self-control, have distinct objectives to pursue, and perceive the learning tasks as valuable. This can be attributed to the fact that positive self-regulation behaviours and strong motivational beliefs may indicate successful online learning performance and strong intrinsic motivation (Bradley et al., 2017). Despite the fact that intrinsic motivation persists when learners feel self-determined (Martela, 2020; Ryan & Deci, 2000), however, evidence demonstrated that exerting external control would have an impact on intrinsic motivation (Deci & Ryan, 1985; Deci et al., 1999). This study argues that the intrinsic and extrinsic motivation, which enhance learners' learner control, are not mutually incompatible. Both intrinsic and extrinsic motivation must be rationally implied by instructors in accordance with necessities (Takahashi, 2018).

According to the present study's findings, learners' motivation to regulate and direct their own learning has been found to be improved in the context of post-pandemic modulation in Malaysian elementary school online learning, as compared to the online learning application before pandemic (Lee, 2019; Mohd Fadzly Wasriep & Lajium, 2019) and during pandemic (Kanyakumari, 2020; Wan, 2020). Nonetheless, there is still room for improvement in the learners' existing motivation for learner control. One aspect that should be considered is to enhance elementary learners' capacity for self-regulation, which in turn determines their motivational beliefs, and eventually impacts their learning motivation.

In brief, the findings of this study have implications for post-pandemic online instructional design. This study promotes the significance of self-regulation strategies that encourage learner control behaviour. Hence, instructors are advised to design instruction that support, drill, and enhance learners' use of self-regulation strategies. In addition, this study did reveal that learners' self-regulation and motivational beliefs played a causal role in their learner control motivation. When designing online learning for elementary learners, instructors should take into consideration to support learners' development of motivational beliefs through efficient self-regulation initiatives.

This study highlights the potential to enhance elementary learner's learner control motivation in the context of online tutorials, by promoting self-regulation strategies through cognitive, metacognitive, and volitional control. Future studies should be conducted to determine the circumstances as such which regulation strategies could efficiently boost learners' motivation to exhibit learner control in a wider range of situations during online learning. Future works should seek to identify the motivational level of today's elementary learner's learner control in online learning context, by expanding the investigation into their motivational beliefs level. Furthermore, longitudinal studies that enable learner control motivational research over a longer time span are required. It would also be useful to take into account other socio-demographic factors, such as age, school type, learning context, country, and so on.

BIODATA and CONTACT ADDRESSES of AUTHORS



Dr. Min Hui LEOW is a senior lecturer in Universiti Teknologi MARA, Penang, Malaysia. She pursued her PhD in Curriculum and Instructional Technology at the University of Malaya, Kuala Lumpur. She is proficient in developing teaching and learning that meets learners' learning needs and actively adapting student-centered experiential learning. Her research interests lie in the systematic design of instruction, fundamentals of teaching and learning development, and contemporary patterns in teaching and learning. Her works have been published in international conference proceedings and international indexes journals.

Min Hui LEOW

Department of Asian & European Language, Academy of Language Studies
Universiti Teknologi MARA

Address: Kampus Permatang Pauh, 13500, Pulau Pinang, Malaysia

Phone: +60 122008059

E-mail: leowminhui@uitm.edu.my



Dr. Rafiza Abdul Razak is an associate professor at the Department of Curriculum and Instructional Technology, Faculty of Education, University of Malaya, Kuala Lumpur. She is an innovative leader who creatively rebrands the department to uplift and boost the departments' wellbeing. She actively organizes international and national seminars. She also initiated several MoAs at the national and international levels. Her innovations were awarded in patents, copyrights, and trademarks accumulated to more than 81 registered products. She published her works in high impact journals.

Rafiza ABDUL RAZAK

Department of Curriculum and Instructional Technology, Faculty of Education
University of Malaya

Address: Jalan Prof Diraja Ungku Aziz, 50603, Kuala Lumpur, Malaysia

Phone: +60 126523893,

E-mail: rafiza@um.edu.my

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