HNUE JOURNAL OF SCIENCE DOI: 10.18173/2354-1075.2023-0082
Educational Sciences, 2023, Volume 68, Issue 4, pp. 43-54
This paper is available online at http://stdb.hnue.edu.vn

STUDENTS' SELF-REGULATED LEARNING IN MOOCS: A CASE STUDY AT A HIGHER EDUCATION INSTITUTION IN VIETNAM

Pham Vu Le Mai* and Luu Thi Kim Nhung
Faculty of English, Hanoi National University of Education

Abstract. With the increase in the enrollment rates in Massive open online courses (MOOCs), learners can apply different self-regulated learning strategies (SRL) and approaches to support their learning. This study investigates the SRL strategies that learners use in a MOOC at a university in Hanoi, Vietnam, with a special focus on how learners' motivations for taking the MOOC impact their behaviour and application of SRL strategies. A mixed-method analysis of the learning behaviours of 40 university students in the MOOC was followed by interviews with 6 individuals. The data shows differences in the behaviour and employment of SRL strategies between the two groups of high and low self-regulators. Learners' motivations and goals were discovered to determine how they visualised the aim of learning in the MOOC and influence their perspective of the MOOC learning process. The findings have implications for designing effective instructional approaches, fostering learner autonomy, and enhancing metacognitive strategies to support students in becoming more self-regulated and successful language learners.

Keywords: self-regulated learning, Massive Open Online Courses, higher education.

1. Introduction

Massive Open Online Courses, or MOOCs, have recently gained popularity, with over 110 million learners worldwide accessing courses from such platforms as Coursera, edX, Udemy, etc. (Shah, 2020) [1]. According to Elsayed and Al-Fedaghi (2021) [2], MOOCs have experienced a significant increase in enrollment during the COVID-19 pandemic due to the shift to remote learning and have become an effective tool for enhancing skills and knowledge in various fields. However, challenges remain, including issues around completion rates, student engagement, and certification (Rodriguez, 2019) [3]. Despite the students' claims of commitment to the course material, they may not complete the entire course due to the wide variety of learners' backgrounds, motivations, expectations, and previous experiences (Littlejohn, Hood, Milligan, & Mustain, 2016) [4]. However, research indicates that the main reason why students have trouble finishing a MOOC is because they have issues with planning, carrying out, and monitoring their learning process, or more specifically, they have difficulties with self-regulating their learning process (Kay et al., 2013) [5].

Self-regulated learning (SRL) is the students' ability to activate metacognitive, cognitive, affective, motivating, and behavioral processes so as to take steps to accomplish their learning objectives and persevere until they fulfill their goals (Zimmerman, Boekarts, & Pintrich, 2000) [6]. In other words, it refers to the self-generated thoughts, feelings, and actions for achieving one's purposes (Zimmerman, 2000a) [7]. In general, students at all levels need the ability to self-

Received July 20, 2023. Revised August 16, 2023. Accepted September 6, 2023.
Contact Pham Vu Le Mai, e-mail address: maipvl@hnue.edu.vn

regulate, but university students particularly benefit from it because they have to deal with a variety of materials in a short span of time. According to Bernacki, Aguilar, & Byrnes (2011) [8], learners with the capacity to engage in self-regulated learning within both structured and unstructured learning contexts tend to employ more effective learning strategies within digital learning environments.

This study delves into an in-depth examination of how students at the tertiary level self-regulate their learning within a MOOC entitled "An Intermediate Guide to Writing in English for University Study", offered by the University of Reading through the Future Learn MOOC platform. The aim is to explore the variations in SRL strategies between students who exhibit low scores and those who earn high scores on a SRL assessment. The particular emphasis is on discerning the disparities in motivations for joining the MOOC between the two groups of participants, namely the low-SRL score group and the high-SRL score group, and how these motivations impact their behaviour and utilisation of SRL strategies in their learning process.

To achieve the above-mentioned objectives, the research seeks for answer to the question: "What are the differences in SRL strategies between students with high SRL scores and those with low SRL scores?"

2. Content

2.1. Self-regulated learning (SRL)

Self-regulated learning is a general term used to describe the processes of learner autonomy and control over their learning strategies and outcomes. It is the systematic control of motivation, thought, and behavior in the pursuit of learning objectives (Zimmerman, 2008) [9]. Active self-regulating learners take charge of their learning by setting clear goals, planning out their approach, using effective strategies for tasks, and managing their time wisely. Moreover, they reflect on how successful their previous learning methods were and make necessary adjustments for their future learning endeavors (Nugent et al., 2019) [10].

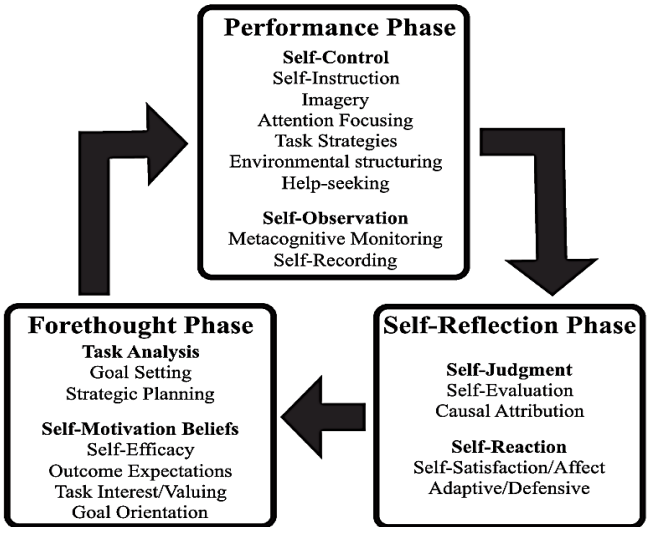

Figure 1. Phases and subprocesses of self-regulation (Zimmerman, 2008) [9]

Zimmerman (2000a) [7] described self-regulation as a cyclical process, wherein individuals engage in "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (p. 14). This cyclical process of self-regulation was later characterised as a personal feedback loop (Zimmerman, 2008) [9], which involves three cyclical phases (Figure 1). During the forethought phase, students analyse the task, set targets, and make plans for how to achieve them. The students then execute the work during the performance phase,

assessing their progress and using a range of self-control and self-observation strategies to keep themselves active to finish the assignment. Finally, during the self-reflection stage, students evaluate how they handle the assignment and make attributions for their success or failure, which causes self-reactions. The self-regulatory cycle is completed by these self-reflections, which in turn affect future learning strategies.

The five SRL sub-processes and their emerging themes as the focus of this paper are examined below:

2.1.1. Motivation and goal setting

Motivation and goal setting relates to identifying the outcomes that learners intend to achieve, along with the learning and performance goals they set at the beginning of the MOOC. Zimmerman (1990) [11] asserted that self-regulation and motivation are intertwined processes, and that motivated learners take a more proactive approach to learning. The participants in this research mainly defined their motivations as: an enjoyment for writing; professional/career development; new skills and knowledge acquisition; new learning experience and environment; and relevance to work/major. They also set their goals as follows: to earn certification; to improve English writing skills; and to complete and share learning process.

2.1.2. Self-efficacy

Self-efficacy, which is described as beliefs about one's capacity to learn or perform at particular levels, has been found to influence students' objectives and strategic decisions (Zimmerman, Bandura, & Martinez-Pons, 1992) [12]. In this study, self-efficacy was linked to learners' confidence in their capacity to learn, confidence in their prior understanding of the subject matter, and learners' resolve and discipline while engaging in learning activities.

2.1.3. Task interest/value

Task interest/value refers to liking or disliking a task for its inherent qualities rather than its instrumental ones in achieving other results. Task interest or value can impact students' learning techniques as well as their accomplishment objectives (Ainley, Corrigan, & Richardson, 2005) [13]. Numerous themes associated with task interest and value surfaced from the analysis of the research data: how well the MOOC relates to their major; its likelihood to support career development; its practicality that can be applied in their real-world examples; the certificate they receive; and general knowledge enhancement.

2.1.4. Task strategies

Task strategies relate to the development of a systematic procedure for tackling certain components of a task. It also includes the flexibility of learners to modify their techniques and plans as they progress through their learning journey. Participants employed multiple task strategies while completing the given MOOC: using additional tools to support learning; reading articles and watching lectures to complete assignments and quizzes; applying theories into practice; note-taking and seeking helps from other people and sources.

2.1.5. Self-satisfaction and evaluation

Self-satisfaction and evaluation are found in Zimmerman's self-reflection phase. Self-evaluation involves comparing one's observed performance with established standards. Bandura (1986) [14] outlined three types of evaluative standards: comparing performance with past levels, achieving mastery in all skill components, and making social comparisons. On the other hand, self-satisfaction refers to the cognitive and emotional responses triggered by personal judgments. Participants in the study described various self-evaluation strategies, such as assessing their own knowledge, seeking external opinions on their progress, evaluating their understanding through exercises and assignments, gauging their ability to apply knowledge and skills in practical

settings, comparing themselves to their peers, and expressing uncertainty regarding self-assessment of their learning progress.

2.2. SRL in MOOCs

MOOCs combines the features of social networking, guidance from subject matter experts, and a wealth of freely available online resources (de Waard et al., 2014) [15]. MOOCs offer potential to help students learn independently (Littlejohn et al., 2016) [4]. The majority of MOOCs are created to encourage students to control their own learning rather than relying solely on the direction of instructors. In MOOCs, students can choose their own learning resources and activities, as well as their level of participation (McAuley et al., 2010) [16]. This independence necessitates that MOOC users should regulate their learning.

This study expands on previous studies on self-regulated learning in online contexts to analyse the SRL sub-processes used by MOOC learners and to investigate how different learning goals and motivations impact their SRL behaviours. The study is framed by the self-regulated learning framework of Zimmerman (2008) [9] which makes it easier to create context-rich accounts of individuals' learning activities and behaviours in a MOOC.

2.3. SRL in Vietnamese context

According to Palfreyman (2004) [17], learners' Asian cultural background would be often considered as a hindrance to self-learning development. However, Trịnh (2008) [18] stated that in the Vietnamese context, self-study ability can be developed through the application of self-regulating learning and if learners are more able to develop SRL, the results of their academic performance would be much improved.

In 2012, Thao and Tham [19] conducted a study on non-English majors' attitudes toward English language learning (ELL) and the use of self-regulated language learning (SRLL) strategies at one college. They discovered that research participants had positive attitudes toward ELL but their engagement in SRL was notably low. In 2020, Thao and Long [20] found that while the overall level of SRLL strategy use among university students was moderate, students needed to improve their use of SRLL strategies.

Hence, the current research tried to mitigate the gap in the existing literature by examining learners' behaviours and actions in using different SRL strategies in a MOOC.

2.4. Research methodology

The case study focused on examining the learning behaviours and actions of 40 university students who enrolled in a MOOC on the Future Learn platform. The investigation took place in February 2023, when all participants had completed or almost completed the course. All the participants were students from a university in Hanoi. The quantitative data was gathered through a survey administered to those who took the course and the qualitative data was collected later from six participants' responses to the interview questions and analysed to investigate the variations in students' SRL strategies and behaviours.

To assess self-regulated learning and its sub-processes in adult learners within online learning environments, a data collection instrument that had been previously published and validated (Fontana, Milligan, Littlejohn, & Margaryan, 2015) [21] was adapted with slight modifications. The survey corresponded to the three phases of SRL by Zimmerman (2008). To be specific, the survey questionnaire consists of a series of items presented on a 5-point Likert scale, ranging from 1 ("not at all true for me") to 5 ("very true for me"), which relate to eight distinct SRL sub-processes. Various scales were used to assess different sub-processes within the SRL phases. The questionnaire results allowed for the creation of an SRL profile for each participant. The profile contained an overall SRL score and scores for each of the eight SRL sub-processes. Table 1 summarizes the factor structure and descriptive data.

Table 1. Factor structure and descriptive statistics for SRLMQ instrument

Factor	No. of items	N	Example item	Minimum	Maximum	Mean	Std. Deviation
F1: Goal setting	3	40	"I set realistic deadlines for learning."	1.00	5.00	3.9750	.86194
F2: Self-efficacy	5	40	"When confronted with a challenge I can think of different ways to overcome it."	2.00	5.00	3.6000	.92819
F3: Task interest/value	3	40	"I think I will be able to use what I learn in the future."	2.00	5.00	4.1250	.85297
P1: Learning/task strategies	4	40	"I change strategies when I do not make progress while learning."	2.00	5.00	3.8250	.84391
P2: Interest enhancement	3	40	"I prefer learning that arouses my interest, even if it is challenging."	2.00	5.00	4.1750	.84391
P3: Help-seeking	2	40	"When I do not understand something, I ask others for help."	2.00	5.00	3.9500	.84580
SR1: Self-satisfaction	2	40	"I try to understand how what I have learned impacts my work/practice."	2.00	5.00	3.9500	.84580
SR2: Self-evaluation	3	40	"I think about what I have learned after I finish."	2.00	5.00	4.1500	.76962

F = forethought, P = performance, SR = self-reflection

Adapted from Fontana, Milligan, Littlejohn, & Margaryan (2015)

According to the results of the survey, the participants were then awarded a rank (1–40) based on their total SRL score, which was determined by summing the responses to each of the 39 questions, with a lowest possible score of 39 and a maximum potential score of 195. To gain a better understanding of self-regulated learning behaviour, participants were rated for each of the eight SRL subprocesses listed in Table 2, in addition to their overall rank position.

Table 2 summarizes the participants (identified by ID) and their ranks for five different sub-processes of SRL. The participants were categorized into two groups: "High" and "Low," based on their overall SRL rankings. The table suggests that participants in the high group tend to exhibit higher levels of overall SRL and its individual sub-processes, compared to the participants in the low group. These findings imply that the high group may have stronger self-regulated learning skills, which can positively impact their learning outcomes in MOOCs. Further content analysis of the interviews would give more insights to answer the research question.

Based on the rank position of each participant, three participants from the group of high overall SRL scores and three participants from the group of low overall SRL scores were invited to participate in a semi-structured interview. Using questions generated iteratively across previous studies (Fontana et al., 2015) [21], a semi-structured interview was created to examine the whole spectrum of SRL sub-processes defined by Zimmerman (2000a) [7].

Table 2. A summary of the participants, and their ranks awarded for overall SRL and individual sub-processes

Participant ID	High or low (rank)	Motivation and goal setting	Self-efficacy	Task strategies	Task interest and value	Self-satisfaction and evaluation
06	High (1)	1	1	1	1	1
12	High (2)	2	2	2	2	2
13	High (3)	3	3	3	14	3
34	High (4)	11	6	4	6	4
18	High (5)	8	14	11	9	5
32	High (6)	4	9	5	3	6
02	High (7)	9	4	9	15	7
25	High (8)	22	8	7	11	8
21	High (9)	13	7	6	21	16
29	High (10)	10	5	20	10	13
19	High (11)	5	19	31	4	10
26	High (12)	6	20	27	20	15
07	High (13)	37	22	12	31	9
14	High (14)	23	10	15	17	11
24	High (15)	7	21	32	5	27
20	High (16)	30	15	22	12	19
22	High (17)	24	16	8	18	25
05	High (18)	14	11	10	16	22
27	High (19)	15	12	16	22	17
03	High (20)	16	17	26	23	14
31	Low (21)	17	23	17	33	18
23	Low (22)	12	33	14	29	23
16	Low (23)	31	13	21	13	35
38	Low (24)	25	26	25	8	20
36	Low (25)	18	18	23	34	30
01	Low (26)	26	27	40	35	38
11	Low (27)	38	24	24	32	24
09	Low (28)	27	30	13	36	26

28	Low (29)	28	29	29	19	31
30	Low (30)	19	34	18	7	34
15	Low (31)	32	38	39	39	29
04	Low (32)	20	25	28	38	36
39	Low (33)	33	31	34	30	32
17	Low (34)	29	32	35	25	33
37	Low (35)	34	35	36	26	21
08	Low (36)	21	36	37	24	28
35	Low (37)	40	40	19	28	12
10	Low (38)	35	39	30	37	39
33	Low (39)	36	28	33	27	40
40	Low (40)	39	37	38	40	37

In order to make the questions suitable for the particular focus of this study and to ensure the directly related to how participants engage with the MOOC, the researcher made necessary adjustments. The chosen items from the assessment tools were selected based on their relevance to self-regulated learning in the context of university-level education. The wording of the selected items was then modified to accurately reflect the experiences of tertiary students participating in a MOOC focused on English writing. The interviews were conducted in person on campus, recorded and transcribed by the researcher using verbatim transcription.

Interview transcripts were analysed alongside survey data to explore learners' self-regulated behaviour in relation to sub-processes. The analysis consisted of three phases, using the eight SRL sub-processes as the initial coding framework. Firstly, six participants' interview transcripts were coded. In the second phase, the transcripts were compared to participants' SRL scores to identify the differences between those with higher and those with lower scores. Variances in learning behaviour and actions were observed across several sub-processes for participants with different overall SRL scores. In the third phase, data from high and low SRL groups were independently reviewed for each sub-process in order to identify behavioural patterns. The study discovered noticeable variations in five sub-processes: motivation and goal setting, self-efficacy, task strategies, task interest and value, and self-satisfaction and evaluation.

2.5. Research findings and discussion

This section presents the findings from both the quantitative analysis of responses to the survey questionnaire and the qualitative analysis of responses to the interviews.

The SRLMQ instrument (Table 1) includes eight factors, namely Goal setting, Self-efficacy, Task interest/value, Learning/task strategies, Interest enhancement, Help-seeking, Self-satisfaction, and Self-evaluation. The mean and standard deviation values for each factor were provided. Among these factors, the highest mean score was for Task interest/value (M=4.125, SD=0.85297), followed by Interest enhancement and Self-evaluation. The lowest mean score was for Self-efficacy (M=3.6, SD=0.92819). These results suggest that the participants in the MOOC generally found the tasks they were engaged in to be interesting and valuable and that they preferred learning activities that aroused their interest. However, they might have struggled with self-efficacy or the belief in their ability to successfully complete tasks. The factor with the highest standard deviation was Self-efficacy (SD=0.92819), indicating that there was a wider range of scores for this factor among the participants. This suggests that some participants might

have high self-efficacy while others might experience challenges. In short, the data table shows that in in the studied MOOC, the participants valued task interest/value and interest enhancement, but might have difficulties with self-efficacy. These findings could be used to inform the design of MOOCs, highlighting the importance of engaging and challenging learning activities, while also providing support for students to develop their self-efficacy skills.

The qualitative data from the interviews pertaining to these five sub-processes is provided and examined further below, with special emphasis on the differences between the learners with high SRL scores and the learners with low SRL scores.

2.5.1. Motivation and goal setting

Three participants with higher SRL scores expressed a strong desire for career growth and recognized the value of writing MOOC in contributing to their professional development and English proficiency. Their goals were specific and focused, as one participant (Number 06, ranked 1 for SRL, 1 for motivation) reflected, "*When practicing academic English writing skills, I have set myself 3 goals: First, to get rid of the habit of passive English writing through sample essays. Second, to fluently apply written English to the current and future working process. Third, to write smarter texts*." These learners exhibited high motivation, a passion for learning, and a clear alignment between their goals and future career aspirations in the field of English language education.

In contrast, the learners with lower SRL appeared to describe their learning experience more abstractly. Their motivations were just a desire to broaden their general knowledge, although their objectives were connected to specific and extrinsic measures. Two out of three low SRL participants set their goals as to complete all compulsory assignments, pass the quizzes and gain a certificate in order to create a more well-rounded profile. One participant (Number 35, ranked 37 for SRL, 40 for motivation) explained his/her goals, "*I'm hoping to receive a completion certificate. I want to achieve a passing grade... I took the course very seriously from the start, and I have completed all of the required assignments*."

These differences in motivation and goal-setting correspond to the results of previous studies on high self-regulators being more inclined to pursue a mastery goal orientation (Zimmerman, 2000a) [7], intrinsic motivation being connected to self-regulation (Groot, 1990), and learners who set their goals more specifically being more likely to regulate their learning better (Zimmerman, 2000a) [7].

2.5.2. Self-efficacy

It can be observed from the interview data that high self-regulation was attributed to two main reasons, namely the learners' prior knowledge and their previous MOOC experience. Firstly, two out of three interviewees admitted that they became familiar with specific course contents through their prior knowledge. Learners who realized they had a solid foundation in academic English writing skills were more confident in their abilities to study and participate in the MOOC. One participant (Number 02, ranked 7 for SRL, 04 for self-efficacy) explained, "*Previously, I have learned some basic English writing skills that are also introduced in this course ... I don't have much experience with effective research, but I'm quite confident that I can accomplish this course with flying colors*."

Secondly, participants who had previously joined MOOCs, demonstrated higher self-efficacy scores due to their familiarity with course platforms and task processes, as one participant (Number 13, ranked 3 for SRL, 3 for self-efficacy) reflected, "*I once had a chance to participate in a MOOC in Futurelearn website before. I'm quite familiar with the course platforms, it is user-friendly… I have confidence that I can finish with a very strong performance*."

The questionnaire data revealed that seventeen out of twenty high SRL participants had previous experience of joining a MOOC. This finding is consistent with previous research by Anderson (1982) [22] and Zimmerman (2000b) [23], which showed that learners who can reflect

on what they have learned and integrate new knowledge with previous ones can have a better learning experience.

On the other hand, learners with low SRL scores had little confidence in their existing knowledge and no prior MOOC experience, yet they still believed in their ability to complete the course and engage with course materials. One participant (Number 10, ranked 38 for SRL, 39 for self-efficacy) commented, "*My writing performance is quite awful, but I think I'm an effective learner, I do have faith that I can finish the assignments with ease.*" This finding shows that individuals' self-efficacy scores may be more significantly influenced by their familiarity with the topic rather than their confidence in their capacity to learn.

2.5.3. Task interest/value

The findings indicated significant variations in how learners with high and low SRL conceptualised and perceived the value of participating in the MOOC. High SRL learners displayed a significant interest in acquiring skills and subject knowledge. All three interviewees with high overall SRL scores assessed their participation in both the course's content and its activities and assignments in terms of the skills they learned. They viewed their participation in the MOOC as an opportunity to enhance their present and future professional development. One learner (Number 13, ranked 3 for SRL, 14 for task interest/value) explained, "*I'm a bit shocked when most use of modal verbs to make tentative points is applicable to writing academic. I think those are very useful and practical, not only in my academic writing and learning but also in my general daily writing and reading.*"

The opportunity to work with datasets from their own contexts of practice added value to their learning experience, as they recognized the real-world relevance of course content and activities. Their intrinsic motivation, driven by a sense of autonomy, contributed to their sustained engagement in the MOOC (Ryan and Deci, 2000) [24].

The participants with higher overall SRL scores also valued their learning in relation to future needs, with three high self-regulators indicating their learning can benefit them in the near future. As one learner (Number 06, ranked 1 for SRL, 1 for task interest/value) stated, "*As an educator in the future, I need to improve this to help my students… Practice researching is really important for university-level study, especially when I will write many dissertations in my career*."

In contrast, low SRL learners associated task interest/value with performative outcomes, such as completing tests and earning a certificate of participation. These certificates were perceived as symbolic representations of their learning accomplishments. One participant (Number 33, ranked 39 for SRL, 27 for task interest/value) stated, "*Earning a certificate in an innovative and academic learning environment like this is definitely what I'm aiming for, as most of my certificates are from my extra-curricular activities*." For these learners, the focus was more on achieving external recognition rather than on the intrinsic value of learning and skill acquisition.

2.5.4. Task strategies

Higher self-regulators demonstrated a more adaptable learning style, where they customised their learning path based on their individual requirements. Also, they showed great willingness to change their approach over time to optimise their learning experience. As one participant (Number 02, ranked 7 for SRL, 9 for task strategies) reflected, "*I have been exposed to some subject contents given here; so when I saw something that I could understand immediately, I often finished it real quick and moved on to the other lectures.*" This adaptability aligns with Zimmerman's (2000a) [7] concept of altering strategies to fit specific circumstances.

Conversely, low SRL participants prioritised a more structured and linear approach to learning, adhering strictly to the course timeline and setting specific hours each week for MOOC participation. They were highly motivated to complete all assessments and earn certificates; as a

result, they actively engaged with more course material and dedicated increased time to the MOOC. One learner (Number 33, ranked 39 for SRL, 33 for task strategies) comments on his/her timetable, "*Most courses require about two to four hours learning per week and last for six to ten weeks. There are also a number of short courses that last two or three weeks. I arrange one hour on weekday evenings to study on Futurelearn. Besides, I also use project management software to keep track of all my tasks and their due dates so I don't miss any of the deadlines*."

The differences in task strategies between participants with high and low SRL scores align with the motivation and goal setting that guide their learning progress. Those with higher SRL scores demonstrate adaptability and flexibility in their learning, aiming to enhance their skills and knowledge of English academic writing. Low SRL participants, however, preferred stricter time management and more disciplined approach, driven by their pursuit of course completion and achievement.

2.5.5. Self-satisfaction and evaluation

Both high and low self-regulators use tasks and assignments as a standard to measure their progress, but learners with high SRL scores consider task evaluations as formative assessment measures. All three interviewees with high SRL scores used assignments as a way to gauge their own progress in learning, with knowledge and skill growth rather than task success serving as an assessment measure of their progress. One student (Number 02, ranked 7 for SRL, 7 for self-satisfaction and evaluation) reflected: "*The most exciting feature was simply trying it out to see if I understood it right, checking the forums to see how others approached it, and seeing if my method was enough or whether there were more effective techniques that I could employ*."

These high self-regulators viewed assignments as opportunities to monitor their development and knowledge growth, rather than comparing themselves to others. As one participant (Number 06, ranked 1 for SRL, 1 for self-satisfaction and evaluation) stated: "*I had a small note when I attended the course to exchange with friends on class on how to improve knowledge of essay writing in English. I let my friend who hasn't taken the course evaluate me before and after learning a MOOC objectively*."

The low self-regulators, on the other hand, perceived tasks as summative assessments, with a focus on completing tasks to obtain certificates. One learner (Number 33, ranked 39 for SRL, 40 for self-satisfaction and evaluation) commented: "*I wanted to receive this certification of achievement. It's sort of a mixed thing, I wanted to study and I wanted to finish the projects to prove that I've studied them*."

All three low SRL interviewees found it frequently challenging to understand and assess their own learning. One participant (Number 35, ranked 37 for SRL, 12 for self-satisfaction and evaluation) who scored low SRL but had high self-evaluation scores talked about their perseverance when encountering difficult tasks. This is supported by the growth mindsets of Dweck (2008) [25], which viewed the problem as a chance to encourage development and deeper learning.

The initial motivations and goals of learners for the MOOC were closely related to their level of self-satisfaction. Two low self-regulators who focused on obtaining certificates were less likely to feel content with their learning experience. One of them (Number 10, ranked 38 for SRL, 39 for self-satisfaction and evaluation) expressed their disappointment in their learning process: "*I had trouble focusing on studying in this MOOC, especially when I had to watch a video of a lecture. Sometimes I spent more time playing the game and totally forgot about watching the rest of the video*."

In contrast, high self-regulators consistently expressed high levels of satisfaction with their involvement and learning. Rather than seeking certification, these students were more driven by a desire to advance their knowledge. They tended to adopt a less formal and structured approach to learning, selecting activities and knowledge that catered to their specific needs. One participant

(Number 06, ranked 1 for SRL, 1 for self-satisfaction and evaluation) reflected: "*By self-studying from the content available from various courses on Futurelearn, I found that I learned a lot of skills and knowledge from it*."

In line with Zimmerman's (2008) [9] conclusion that learners who establish precise objectives are inclined to utilize mastery standards for self-evaluation, this correlation between the forethought phase (motivation and goal setting) and the self-reflection phase (evaluation and self-satisfaction) is evident.

3. Conclusion

The study concluded from both quantitative and qualitative data that high self-regulated learners in MOOCs differ from low self-regulated learners in terms of their motivation, goal-setting, self-efficacy, task interest/value, task strategies, and self-satisfaction and evaluation. These differences align with Zimmerman's (2000a) [7] three stages of self-regulated learning: forethought, performance, and self-reflection. High self-regulated learners were more motivated by professional development rather than extrinsic incentives, which led to a greater focus on content relevance and individual learning needs. They also exhibited a more adaptable approach to tasks and were more likely to modify their strategies to achieve optimal learning outcomes. In contrast, low self-regulated learners were more focused on earning certificates and exhibited a more structured, uniform approach to tasks. They were motivated by extrinsic incentives and relied on external markers of success to evaluate their learning. Their learning was less likely to be applied to real-life situations and linked to their major, resulting in decreased task interest/value.

These findings provide important implications for MOOC assessments, as they suggest that current assessment methods may not accurately capture the learning outcomes of high self-regulated learners who approach MOOCs as non-formal learning opportunities. In addition, this study holds noteworthy implications for MOOC designers. Considering the diverse learner backgrounds and the overarching objective of MOOCs to enhance educational accessibility, it becomes imperative to understand how to effectively support learners with varying tendencies and capabilities. Overall, the study highlights the importance of self-regulated learning in MOOCs and suggests that learners who adopt a flexible, individualized approach to learning are more likely to achieve optimal learning outcomes.

REFERENCES

[1] Shah, D., 2020. MOOCs in 2020: Breaking down the numbers. *Class Central*. Retrieved from https://www.classcentral.com/report/mooc-stats-2020/

[2] Elsayed, M. M., & Al-Fedaghi, S., 2021. The impact of MOOCs on e-learning during COVID-19 pandemic. *Education and Information Technologies, 26*(4), 3445-3456.

[3] Rodriguez, C. O., 2019. Making the case for MOOCs: Insights and trends from recent literature. *The International Review of Research in Open and Distributed Learning, 20*(3), 1-17.

[4] Littlejohn, A., Hood, N., Milligan, C., & Mustain, P., 2016. Learning in MOOCs: Motivations and self-regulated learning in MOOCs. *The Internet and Higher Education, 29*, 40–48.

[5] Kay, J., Reimann, P., Diebold, E., & Kummerfeld, B., 2013. MOOCs: So Many Learners, So Much Potential... *IEEE Intelligent Systems*, (3), 70–77.

[6] Zimmerman, B., Boekarts, M., & Pintrich, P., 2000. A social cognitive perspective. *In of Self-Regulation* (Vol. 13, pp. 451–502). Academic Press San Diego, CA.

[7] Zimmerman, B., 2000a. Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, M. Zeidner, & P. Pintrich (Eds.), Handbook of self-regulation (pp. 13–39). San Diego, CA: Academic Press.

[8] Bernacki, M. L., Aguilar, A. C., & Byrnes, J. P., 2011. Self-regulated learning and technology-enhanced learning environments: An opportunity-propensity analysis. *Fostering self-regulated learning through ICT*, 1-26.

[9] Zimmerman, B. J., 2008. Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, *45*(1), 166-183.

[10] Nugent, A., Lodge, J., & Carroll, A., et al., 2019. *Higher education learning framework: An evidence-informed model for university learning*. Report, Science of Learning Research Centre, The University of Queensland, Australia.

[11] Zimmerman, B. J., 1990. Self-regulating academic learning and achievement: The emergence of a social cognitive perspective. *Educational psychology review*, *2*, 173-201.

[12] Zimmerman, B. J., Bandura, A., & Martinez-Pons, M., 1992. Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, *29*, 663–676.

[13] Pintrich, P., Smith, D., Garcia, T., & McKeachie, W., 1991. *A manual for the use of the motivated strategies for learning questionnaire (MSLQ).* Ann Arbor, Michigan: National Center for Research to Improve Postsecondary Teaching and Learning.

[14] Bandura, A., 1986. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

[15] de Waard, I., Gallagher, M. S., Zelezny-Green, R., Czerniewicz, L., Downes, S., Kukulska-Hulme, A., & Willems, J., 2014. Challenges for conceptualising EU MOOC for vulnerable learner groups. *Proceedings of the European MOOC Stakeholder Summit 2014* (pp. 33–42).

[16] McAuley, A., Stewart, B., Siemens, G., & Cormier, D., 2010. *In the open: The MOOC model for digital practice*. Charlottetown, Canada: University of Prince Edward Island.

[17] Palfreyman, D., 2004. *Introduction. In D. Palfreyman & R. C. Smith, Learner* 24 *autonomy across cultures.* Great Britain: Antony Rowe Ltd, Chippenham and Eastbourne.

[18] Trinh Quoc Lap, 2008), "Developing self-study capacity in the Vietnamese context". *Can Tho University Journal of Science,* (10), 169 - 175.

[19] Thao, T., & Tham, D., 2013. The Attitudes towards English language learning and use of self-regulated learning strategies among college Non-English majors, *International Journal of Scientific and Research Publication 3*(7) (2013) 1-8.

[20] Thao, T., & Long, N., 2020. The use of Self-regulated Language Learning Strategies Among Vietnamese English-majored Freshmen: A Case Study. *VNU Journal of Science: Education Research, 36*(1).

[21] Fontana, R., Milligan, C., Littlejohn, A., & Margaryan, A., 2015. Measuring self-regulated learning in the workplace. *International Journal of Training and Development, 19*(1), 32–52.

[22] Anderson, J., 1982. Acquisition of cognitive skill. *Psychological Review*, *89*(4), 369–406.

[23] Zimmerman, B., 2000b. Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology*, *25*, 82–91.

[24] Ryan, R. M., & Deci, E. L., 2000. Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, *25*(1), 54-67.

[25] Dweck, C., 2008. *Mindset: The new psychology of success*. New York: Ballantine Books.