PROCEDER:
Applied Linguistics, Literature, and Language Education
Vol. 1 No. 2, 2023, pp. 180-187

FROM SELF-REFLECTION TO SELF-REGULATED LEARNING: DO METACOGNITIVE PROMPTS WITH DIGITAL TOOL SUPPORT?

Tina Priyantin, Didi Suherdi, Fazri Nur Yusuf
Universitas Pendidikan Indonesia

Abstract

As we enter the era of digital learning, technological advancements have accelerated the demand for self-regulated learning (SRL) and opened up new learning options that may encourage the development of self-control skills. This study aims to provide metacognitive prompts in self-reflection activity by using a digital tool as well as to investigate how students build their metacognitive strategies to regulate their learning. This qualitative study was conducted to 32 EFL pre-service teachers joining the Micro Teaching course. They were assigned to write a self-reflection after they did their teaching practices through a digital tool called *Grokspot* which is used for feedback, reflection and discussion. Four question prompts for each reflection were inserted into the task instructions and each reflection posting was analyzed by using SRL microanalysis to find out the metacognitive strategies that support self-regulation. The findings revealed that the digital tool facilitated the participants to explore reflection more easily and motivate them to participate in the activities. In the first self-reflection, most students organized their reflections based on the prompts by monitoring and evaluating their performances although many of them still depended on the instructor and peer feedback. Furthermore, specific metacognitive strategies still couldn't be identified much from most reflections regarding future planning or strategies to improve their performances, However, since scaffolding was given more intensively on the second self-reflection activity, their awareness of metacognitive strategies was found more significant in terms of two dimensions of self-regulated learning; metacognition and environment regulation. Implications of the study are discussed based on the findings.

Keywords: Digital media; metacognition; reflective practice; self-reflection; self-regulated learning

To Cite: Priyantin, T., Suherdi, D., & Yusuf, F. N. (2023). From self-reflection to self-regulated learning: Do metacognitive prompts with digital tool support?. *Proceder: Applied Linguistics, Literature, and Language Education*, *1*(2), 180-187.

INTRODUCTION

In the current global curriculum, 21st-century skills need to be developed in all fields including education. "The core idea of the Learning to Learn Curriculum is that educators should help students improve their general abilities, such as problem-solving, planning, and decision-making which can be conceptualized as metacognitive skills" (Chen & Chang, 2021 p. 3). In order to be prepared for the workplace of the future, which is fast changing in large part owing to digital disruption across many industries, university students need to develop additional skills, adaptability, and flexibility (Anthonysamy et al., 2020). Therefore, teacher educators should be concerned about how to make students become autonomous and lifelong learners by facilitating them in learning activities that experience to regulate their learning. Students who engage in self-regulated learning are encouraged to set their own objectives and choose the plans and methods to use to reach those objectives. This increases their self- awareness of their performance, encourages them to keep track of their learning progress, and allows them to manage the social and physical environment (Wang, 2004).

*Corresponding author:
tina.priyantin1275@upi.edu

The term self-regulated learning (SRL) has been studied in numerous study fields over the past few decades, however, it is still utilized in the contemporary context. According to Zimmerman (2000: 14), self-regulation is defined as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals". Students' level of metacognitive, motivational, and behavioral engagement in the process of tracking their own learning is also referred to as SRL (Lim et al., 2020). The goal-oriented process starts from the forethought phase and performance phase to the reflection phase (self-monitoring, self-control, self-reflection) (Pintrich, 2000; Zimmerman, 2000).

Self-reflection can be utilized in the classroom to foster SRL since it helps teachers communicate subject- matter knowledge, teaches students to evaluate their own work, and enhances their own self-control, therefore, it motivates pupils to engage in active learning (Vasu et al., 2020). Self-judgement and self-reactions are responses included in the self-reflection phase (Zimmerman & Moylan, 2014). Self-evaluation, which involves comparing one's performance with a standard, is a crucial aspect of self-judgment. Self-reactions can be in the forms of self- satisfaction in which a person judges him/herself with cognitive and affective reactions, and adaptive/defensive decisions that refer to a student's readiness to participate in additional learning cycles by either continuing to employ or changing a technique. The individual's knowledge of his or her affection, experiences, and cognition grow with the depth of reflection. It involves self-reflection, self-recall, self-observation, self-analysis, and self- dialogue (Yip, 2006).

In the context of instruction and learning, the ideas of metacognition and reflection are interrelated (Alt & Raichel, 2020). Hj. Ebil et al. (2020) in their study claimed that students can engage in cognition and metacognition through self-reflection, which facilitates self-regulated learning. Strong metacognitive-regulation skills enable students to select the most effective learning strategies for a task and adapt them in light of the outcomes. In their study, Cini et al. (2020) found that students with high levels of metacognitive awareness understand the task's expectations and find it simpler, especially when they are exposed to more collaborative learning opportunities. However, many students are not aware of their metacognition and how to build metacognitive skills and strategies, even at the tertiary level. Therefore, teacher educators should facilitate students by conducting training or scaffolding that is combined with active learning to raise metacognitive awareness (Pantiwati, 2017). "Scaffolding strategies should be incorporated into the learning environment to help students develop their ability to reflect on their own learning" (Porntaweekul et al. 2016, p. 250) that is engaged in metacognition, on their own learning.

When students are only instructed what to do without guidance, they will tend to seek help, instead of thinking about and regulating their own learning (Rasmussen & Stewart, 2018). The scaffolding can be conducted through metacognitive prompts as (Zhang et al., 2015) state that students are encouraged to keep track of their inquiry- learning process, identify positive steps and challenges, and take appropriate action to attain their individual learning goals during an inquiry by using metacognitive prompts. A study from Peters and Kitsantas (2010) found that students who received the metacognitive prompts had more sophisticated content knowledge compared with those without prompts. They also added that the prompting addressed self-evaluation which led to self-regulation. Bannert et al. (2015) assumed that allowing students to organize, monitor, and assess their own learning will enable them to use their metacognitive skills and knowledge, which will improve self-regulated learning and learning outcomes. Prompts may also emphasize the learning process and help them connect their actions to the results which leads to opportunities to practice SRL (Siegesmund, 2017). This kind of SRL intervention may inform and train learners about the importance of SRL as well as the strategies, prompt them to monitor and reflect on their learning, and develop a learning journal (Jansen et al., 2020)

Since current students are digital savvy, developing SRL can be facilitated by technology (Yot-Domínguez & Marcelo, 2017). Digital technologies open up new learning possibilities and options that encourage the development of self-control skills and may support SRL (Yen et al., 2018; Yot-Domínguez & Marcelo, 2017). If the technology is basic enough to not be a distraction, digital technologies that involve a high level of information manipulation may actively support a reflection process (Kirk & Pitches, 2013). The availability of more digital resources has led to the development

of a variety of strategies and techniques for encouraging self-regulated learning, including training, scripting, and prompting (Zumbach et al., 2020).

A few studies have been conducted regarding the use of digital tools to support students' reflective practice as well as self-regulated learning. (Chang et al., 2016) conducted a study by using e-portfolios for reflection and they claimed that it enhanced SRL. A study of ePortfolio-based learning was also conducted by Nguyen and Ikeda (2015) and the result revealed that it affected students' SRL skills positively. However, although digital technologies can be interesting media for students to learn and facilitate reflective practice, it doesn't guarantee that students may notice what to analyze in reflections and even develop their self-regulated learning. Therefore, this study aimed to provide metacognitive prompts in self-reflection activity by using a digital tool as well as to investigate how students build their metacognitive strategies to regulate their learning. Three research questions guided this study:

1. How do metacognitive prompts with a digital tool facilitate pre-service teachers in developing written self-reflection?
2. To what extent do metacognitive prompts support self-regulated learning?

.

METHOD

Data Collection

Participants were 32 pre-service teachers majoring in English Education and taking the Micro Teaching course. A qualitative method was employed in this study to gain an in-depth understanding of how metacognitive prompts by using a digital tool give participants an easier way to develop self-reflection, what types of metacognitive strategies are used to improve teaching performances, and whether the strategies led them to regulate their learning. Each participant conducted two-time teaching performances which were observed by their peers and given feedback. Then, they were assigned to write a self-reflection for each teaching performance through a digital application for feedback, reflection, and discussion called *Grokspot*. Four metacognitive question prompts were inserted into the instruction for each reflection task, and they should write a reflection paragraph. For the second reflection, the question prompts were created differently to stimulate participants in comparing their first and second teaching performances. The metacognitive prompts for the first self-reflection are as follows:

1. *What things worked and didn't work well in your teaching practice?*
2. *What were your biggest challenges and how did you overcome them?*
3. *What did you fear most and how did you face it?*
4. *What do you need to improve your next performance?*

These are the metacognitive prompts that were inserted into the second self-reflection:

1. *What components or aspects did you find improved on your second performance?*
2. *Which aspects do you still need to improve? (Please also connect them to the lesson plan design)*
3. *Which performance do you see as more challenging and why?*
4. *What strategies are you planning to improve your future performance?*

The main data were only taken from the participants' written self-reflections in *Grokspot* by identifying their reactions to the question prompts in both reflection activities.

Data Analysis

Data were analyzed by using the microanalysis tool for self-regulated learning (SRL) from Zimmerman (2008) by measuring the processes of three phases which include planning before a clearly defined learning task occurs, measuring the processes of performance during the learning task, and measuring the processes of self-reflection as the learner reacts to feedback on the task. SRL microanalysis guides participants' thoughts while capturing information on their cognition, metacognition, and behavior, through prompting which simultaneously encourages the learner to be

reactive to the directed questions and their own answers to the prompts (Peters-Burton & Botov, 2017).

Since this study only focused on students' metacognitive strategies *during* and *after* the teaching practices or *monitoring* and *evaluating* phases, therefore, the study only analyzed students' written self-reflection. The first step was analyzing the ways the participants reacted to the prompts, whether they answered the questions or connected their weaknesses to the solutions or strategies. Moreover, the analysis identified the specific metacognitive strategies used by the students to improve their teaching performances and compared the first and the second self-reflections to identify whether the 2nd reflection reflected the 1st one as well. The final analysis was identifying the types of metacognitive strategies that supported self-regulated learning.

FINDINGS AND DISCUSSION

In this section, the results of participants' self-reflections are described by first, explaining how metacognitive prompts with the support of a digital tool facilitated pre-service teachers in developing self-reflection activities. The microanalysis of self-reflections was then described by mentioning the types of metacognitive strategies used in the self-reflections and how the strategies supported the practice of self-regulation.

RQ 1: How do metacognitive prompts with a digital tool facilitated pre-service teachers in developing self-reflection?

The use of the digital tool in this reflection practice was kind of new, especially in the pandemic era where students had to use various platforms for online learning. Previously, students practiced self-reflection by sending the file via e-mail and there were fewer interactions between teacher to students, and students to students. A few times, some students did not submit their self-reflections for various reasons, but we assume they were less guidance and interactions. *Grokspot* as the digital tool for reflection and feedback has given more interactive activities in which students did not only post their self-reflection, but also could see their peers' reflections as well as give comments and emoticons. The features are similar to social media and therefore, it has attracted students' interest to participate. During the reflection process, it was found that all students posted their self-reflection, some of them put emoticons on their peers' reflections, and a few of them gave comments on their peers' reflections. We also put our comments on all students' self-reflections. (Duval et al., 2017) claimed that when students and tutors communicate via digital media, the messages they exchange are persistent, allowing students to review them and consider the contributions of all parties, especially when the data can be captured, represented, and retrieved in ways that promote reflections. (Yot-Domínguez & Marcelo, 2017) mentioned the term 'active presence', when young people need to have a personal online presence and support collaborative learning. Digital reflections also give benefits which include improved reflection practice and the creative process because digital activity and process recording create a "mirror" that allows pupils to "see again" (Kirk & Pitches, 2013).

The use of metacognitive prompts was also found to facilitate and guide students in developing their self- reflections. They organized the reflections based on the question prompts although a few of them didn't answer some parts of the questions. On the first self-reflection activity, five students didn't explain what worked well in their first teaching performances and two of them missed describing the things that didn't work well. The missing information was also found concerning the biggest challenge during the practice and how to overcome it. All students responded well to the prompt, but three of them missed to express clear solutions to overcome the challenges. Bannert and Mengelkamp (2013) claimed that individual characteristics may influence the way they respond appropriately to the prompts. Probably the students' level of prior knowledge is too low, thus the prompts overwhelm them, or the level is high enough, so no strategy support is necessary. (Zumbach et al., 2020) support that prior knowledge can also influence the effectiveness of the prompts. Furthermore, I assume that the prompts were not specific enough to lead students to reflect. Rasmussen and Stewart (2018) in their previous study found that not all open-ended encouraged learners' metacognitive reflection, and therefore, the questions must be very specific so that students

can focus on the learning's content and not only the methods they employed. To transition from thinking about information to thinking about their own learning, students require specialized support. In this case, a scaffolding of how to develop self-reflection is needed to guide students to better metacognitive skills.

Based on the findings, we decided to give feedback on their first self-reflections and guidance for the second

one on how to build their metacognitive skills instead of only depending on the teacher and peer feedback. Moreover, examples were shown so the participants would get pictures of what they needed to reflect on. The next process was implemented the same as the previous reflection practice, but the prompts were created differently and more specifically. The results were identified as improved quite significantly since all participants developed their self-reflections exactly based on the prompts given, although 2 of them still could not be aware of their metacognition in terms of evaluating their performances and planning the strategies. Instead of thinking of the strategies for their future performances, they focused more on appearance as peer feedback dealt with that matter. However, with scaffolds, not only most participants constructed more well-organized self-reflections, but also built better metacognitive awareness by the prompting guidance. They could monitor the improved components of their teaching performances and evaluate what still needs to improve as well as plan the strategies for the future performance

Findings also revealed that some participants did not connect the weaknesses and the strategies. For example, one of them wrote that she got a problem with her speech pace which was too fast, and her strategy to deal with it was by controlling the speed but without being supported by more specific ways of how to practice speed control. Another participant evaluated his weaknesses in terms of nervousness, but he didn't mention a clear strategy to overcome that problem. One participant even did not mention any strategies regarding nervousness matter in performing. In this case, problem-solving in metacognition still could not be achieved significantly and more practice should be conducted. (Chou, 2017) suggested developing initial cognitive processing to facilitate students' metacognition so they comprehend the tasks easily, identify specific problems, and search for appropriate solutions. Students might deliberately use techniques to address challenging situations if they are aware of their own cognitive capabilities for doing so (Monje & Macasieb, 2020).

RQ 2: To what extent do metacognitive prompts support self-regulated learning?

This study focused on metacognitive awareness and strategies through self-reflection activities which only concerned with how students experienced the process of monitoring and evaluating their teaching performances based on the metacognitive prompts. SRL microanalysis was used only to analyze participants' written self- reflection *during* and *after* their teaching performances.

Self-reflection #1

In the first self-reflection postings, question prompts number 1 to 3 related to the monitoring process during the teaching performances. Most participants could monitor their strengths and weaknesses during the performances. The ability to relate the teaching steps with the lesson plan was put as the strength that the participants mostly wrote. Successful students' engagement and participation became the next things which they considered working well. While the strengths had similar components among the participants, the weaknesses were found more varied which dealt with their inability to give clear instructions, give more opportunities for students to participate, build students' enthusiasm in learning, manage the time, implement more practice instead of explaining theories, controlling speech pace, and some other factors.

Regarding the biggest challenge and fear they had during the teaching practice and the solutions to overcome those matters, various answers were also found in most self-reflections, although a few participants could not describe clearly and even didn't put any solutions. Controlling nervousness, keeping students' attention and comprehension of the material, finding appropriate methods, and adjusting learning activities with the lesson plan were some examples written by the participants.

However, when it came to the solutions, some of them did not relate to the challenges and fears that happened. For example, one participant wrote that the biggest challenge was when her explanation was not understandable by the students. For the solution, instead of finding appropriate strategies to explain lessons, she preferred to construct a specific conclusion before ending the lesson. This might happen because the participants' prior knowledge of pedagogy is low, but she is aware of her metacognition. As (Teng, 2020) claims that learners may acknowledge the value of metacognitive strategies but lack the necessary skills to know how and when to apply them.

The evaluating phase was related to question prompt number 4 which asked the participants what they need to improve for the next performance. They were able to evaluate the strategies to improve their performance, however, a few participants did not get them in line with the previous answers. One example is from a participant who mentioned that she was unsuccessful in making the students understand because she spoke too fast, but instead of finding strategies for explaining lessons, she wrote that she needed to practice how to manage her time. In another case, the participants connected the weaknesses and the strategies for improvement, but they didn't mention specific strategies. For example, they wrote that they would like to improve their teaching style and teaching method but without mentioning specific ways to reach the target. It is assumed that the participants have low learning goals compared to those who were able to describe specific targets or strategies. It is in line with a study by Chang, et al. (2018) who found that "the learners with better goal setting demonstrate more effective self-observation". Furthermore, engagement with oneself and self-reflection are associated with efforts and are not always simple matters (Slepcevic-Zach & Stock, 2018).

Self-Reflections #2

Four metacognitive question prompts in this section are still related to the monitoring and evaluating phases. Question prompts number 1 to 3 deal with how students monitor their improvement as well as their weaknesses, but an additional prompt was added to lead the participants to connect the teaching performance with the lesson plan. The 4th question prompt refers to the evaluating phase in which the participants should find out the strategies they are planning to do to improve the last performances. Since feedback and scaffold were given before the participants posted the 2nd self-reflections, the way they wrote the postings was changed quite significantly. Most participants described the improving components by connecting the strategies posted on the 1st self-reflections. For example, one participant posted on the first reflection a strategy to build students' participation by designing more critical questions. On the 2nd one, she posted that the learning process was more successful as the interactions and participation were improved. It shows that she had a belief that she could increase her capacity which it relates to the term 'self-efficacy', which is defined by Bandura (1997) as "the degree of confidence that a learner display concerning performing a task or pursuing a goal". In their study, (Chang et al., 2018) state that self-efficacy, curiosity, and learning objectives may all affect how motivated someone is to study, suggesting that learning goals have an impact on how motivated someone is to learn, although learning results are not predicted by students' metacognitive views (Çini et al., 2020)

In this reflection activity, the participants also posted more significant descriptions in identifying the things

to improve, even though the problems were quite similar to the previous performances. Explaining theories too much and giving unclear instructions were two weaknesses that were mostly posted, followed by attracting students' attention, controlling speaking speed, and managing time. Despite many of them still responded to the prompts by taking from the teacher and peer feedback after the performances and they had similar aspects of weaknesses, the metacognitive awareness was enhanced when it was connected to the 4th prompt in terms of planned strategies to improve the future performances. For instance, one participant posted that she still couldn't implement appropriate techniques and build fun and interactive activities and the strategies she chose were by watching teaching demo videos and reading more books related to teaching and learning English. The participants' way of solving problems relates much to two of the four dimensions of SRL which include metacognition regulation and environmental regulation. (Yot-Domínguez & Marcelo, 2017)

explain that metacognition deal with how a learner builds a commitment to the learning goal, planning, and follow-up, while environmental cognition is the efforts to search for materials and resources. This control process could also be triggered by monitoring process output which leads learners to choose appropriate resource strategies and manage time as well as build more efforts (Rivers et al., 2022). Vasu et al. (2020) put the term 'adaptive behaviours', which refers to self- regulatory behaviours including information seeking and learning, adopting efficient strategies, creating objectives, and effectively controlling the learning environment.

CONCLUSION

By analyzing both self-reflection activities, it can be concluded that metacognitive prompts through *Grokspot* have facilitated pre-service teachers in developing self-reflection and that adding prompts to the learning process promotes the development of cognitive and metacognitive learning strategies which stimulates the implementation of self-regulated learning. The second reflection practice showed more qualified content as feedback from the first self-reflection and scaffolding for the second one was given to guide the pre-service teachers to build their metacognitive awareness. The ability to self-regulate needs a long process with supported training. When learners only have a brief introduction, they fully will follow instructions. However, if the training period had been extended, compliance with the basic guidelines for successful metacognitive education as well as metacognitive support would have increased. Last but not least, this study only analyzed participants' written self-reflections without using another instrument to strengthen the data. An interview or focus group discussion might be better to be conducted to gather clearer information regarding the written reflections.

REFERENCES

Alt, D., & Raichel, N. (2020). International and Multidisciplinary Perspectives Reflective journaling and metacognitive awareness : insights from a longitudinal study in higher education. *Reflective Practice*, *00*(00), 1–14. https://doi.org/10.1080/14623943.2020.1716708

Anthonysamy, L., Koo, A. C., & Hew, S. H. (2020). Self-regulated learning strategies in higher education: Fostering digital literacy for sustainable lifelong learning. *Education and Information Technologies*, *25*(4), 2393–2414. https://doi.org/10.1007/s10639-020-10201-8

Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.

Bannert, M., & Mengelkamp, C. (2013). *Scaffolding Hypermedia Learning Through Metacognitive Prompts*.
171–186. https://doi.org/10.1007/978-1-4419-5546-3_12

Bannert, M., Sonnenberg, C., Mengelkamp, C., & Pieger, E. (2015). Short- and long-term effects of students' self- directed metacognitive prompts on navigation behavior and learning performance. *Computers in Human Behavior*, *52*, 293–306. https://doi.org/10.1016/j.chb.2015.05.038

Chang, C. C., Liang, C., Chou, P. N., & Liao, Y. M. (2018). Using e-portfolio for learning goal setting to facilitate self-regulated learning of high school students. *Behaviour and Information Technology*, *37*(12), 1237–1251. https://doi.org/10.1080/0144929X.2018.1496275

Chang, C. C., Liang, C., Shu, K. M., Tseng, K. H., & Lin, C. Y. (2016). Does using e-portfolios for reflective writing enhance high school students' self-regulated learning? *Technology, Pedagogy and Education*, *25*(3), 317–336. https://doi.org/10.1080/1475939X.2015.1042907

Chou, M. H. (2017). A Task-based Language Teaching Approach to Developing Metacognitive Strategies for Listening Comprehension. *International Journal of Listening*, *31*(1), 51–70. https://doi.org/10.1080/10904018.2015.1098542

Çini, A., Malmberg, J., & Järvelä, S. (2020). How individual metacognitive awareness relates to situation-specific metacognitive interpretations of collaborative learning tasks. *Educational Studies*. https://doi.org/10.1080/03055698.2020.1834359

Duval, E., Sharples, M., & Sutherland, R. (2017). Technology-enhanced learning: Research themes. *Technology Enhanced Learning: Research Themes*, 1–180. https://doi.org/10.1007/978-3-319-

02600-8

Hj. Ebil, S., Salleh, S. M., & Shahrill, M. (2020). The use of E-portfolio for self-reflection to promote learning: a case of TVET students. *Education and Information Technologies*, *25*(6), 5797–5814. https://doi.org/10.1007/s10639-020-10248-7

Hooshyar, D., Kori, K., Pedaste, M., & Bardone, E. (2019). The potential of open learner models to promote active thinking by enhancing self-regulated learning in online higher education learning environments. *British Journal of Educational Technology*, *50*(5), 2365–2386. https://doi.org/10.1111/bjet.12826

Jansen, R. S., van Leeuwen, A., Janssen, J., Conijn, R., & Kester, L. (2020). Supporting learners' self-regulated learning in Massive Open Online Courses. *Computers and Education*, *146*(November 2019). https://doi.org/10.1016/j.compedu.2019.103771

Kirk, C., & Pitches, J. (2013). Digital reflection: Using digital technologies to enhance and embed creative processes. *Technology, Pedagogy and Education*, *22*(2), 213–230. https://doi.org/10.1080/1475939X.2013.768390

Lim, C. L., Jalil, H. A., Marof, A. M., & Saad, W. Z. (2020). Peer learning, self-regulated learning and academic achievement in blended learning courses: A structural equation modeling approach. *International Journal of Emerging Technologies in Learning*, *15*(3), 110–125. https://doi.org/10.3991/ijet.v15i03.12031

Monje, J., & Macasieb, J. (2020). Metacognitive strategy use or English proficiency? Influences in academic reading achievement of stem students. *Journal of Asia TEFL*, *17*(2), 671–680. https://doi.org/10.18823/asiatefl.2020.17.2.25.671

Nguyen, L. T., & Ikeda, M. (2015). The effects of ePortfolio-based learning model on student self-regulated learning. *Active Learning in Higher Education*, *16*(3), 197–209. https://doi.org/10.1177/1469787415589532 Okoza, J., Aluede, O., & Owens-Sogolo, O. (2013). Assessing Students' Metacognitive Awareness of Learning Strategies among Secondary School Students in Edo State, Nigeria. *Research in Education*, *90*(1), 82–97. https://doi.org/10.7227/RIE.90.1.6

Pantiwati, Y. & H. (n.d.). *ERIC - EJ1155598 - Self and Peer Assessments in Active Learning Model to Increase Metacognitive Awareness and Cognitive Abilities, International Journal of Instruction, 2017-Oct*. Retrieved September 29, 2020, from https://eric.ed.gov/?q=self+assessment+AND+metacognitive+awareness&id=EJ1155598

Peters-Burton, E. E., & Botov, I. S. (2017). Self-regulated learning microanalysis as a tool to inform professional development delivery in real-time. *Metacognition and Learning*, *12*(1), 45–78. https://doi.org/10.1007/s11409-016-9160-z

Peters, E. E., & Kitsantas, A. (2010). Self-regulation of student epistemic thinking in science: The role of metacognitive prompts. *Educational Psychology*, *30*(1), 27–52. https://doi.org/10.1080/01443410903353294 Rasmussen, C., & Stewart, P. (2018). Metacognitive Prompts within an Online Course. *Journal of the International Society for Teacher Education*, *22*(1), 19–29.

Rivers, D. J., Nakamura, M., & Vallance, M. (2022). Online Self-Regulated Learning and Achievement in the Era of Change. *Journal of Educational Computing Research*, *60*(1), 104–131. https://doi.org/10.1177/07356331211025108

Siegesmund, A. (2017). Using self-assessment to develop metacognition and self-regulated learners. *FEMS Microbiology Letters*, *364*(11), 1–4. https://doi.org/10.1093/femsle/fnx096

Slepcevic-Zach, P., & Stock, M. (2018). ePortfolio as a tool for reflection and self-reflection. *Reflective Practice*, *19*(3), 291–307. https://doi.org/10.1080/14623943.2018.1437399

Teng, F. (2020). Tertiary-Level Students' English Writing Performance and Metacognitive Awareness: A Group Metacognitive Support Perspective. *Scandinavian Journal of Educational Research*, *64*(4), 551–568. https://doi.org/10.1080/00313831.2019.1595712

Vasu, K. A., Mei Fung, Y., Nimehchisalem, V., & Md Rashid, S. (2020). Self-Regulated Learning Development in Undergraduate ESL Writing Classrooms: Teacher Feedback Versus Self-Assessment. *RELC Journal*, 003368822095778. https://doi.org/10.1177/0033688220957782

Yen, M. H., Chen, S., Wang, C. Y., Chen, H. L., Hsu, Y. S., & Liu, T. C. (2018). A framework for self-regulated digital learning (SRDL). *Journal of Computer Assisted Learning*, *34*(5), 580–589. https://doi.org/10.1111/jcal.12264

Yip, K. S. (2006). Self-reflection in reflective practice: A note of caution. *British Journal of Social Work*, *36*(5), 777–788. https://doi.org/10.1093/bjsw/bch323

Yot-Domínguez, C., & Marcelo, C. (2017). University students' self-regulated learning using digital technologies. *International Journal of Educational Technology in Higher Education*, *14*(1). https://doi.org/10.1186/s41239-017-0076-8

Zhang, W. X., Hsu, Y. S., Wang, C. Y., & Ho, Y. T. (2015). Exploring the Impacts of Cognitive and Metacognitive Prompting on Students' Scientific Inquiry Practices Within an E-Learning Environment. *International Journal of Science Education*, *37*(3), 529–553. https://doi.org/10.1080/09500693.2014.996796

Zumbach, J., Ortler, C., Deibl, I., & Moser, S. (2020). Using Prompts to Scaffold Metacognition in Case-Based Problem Solving within the Domain of Attribution Theory. *Journal of Problem-Based Learning*, *7*(1), 21–31. https://doi.org/10.24313/jpbl.2020.00206