Self-Regulated Learning on ChatGPT in Writing Theses for Master Degree Students in Higher Education

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Abstract. In today's digital age, the advent of artificial intelligence technology provides an alternative for master's programme students in writing their theses. However, there are still students who find it difficult to use AI technologies such as ChatGPT in writing their theses. Therefore, this study aims to analyse the needs of master's programme students in writing their theses with the help of ChatGPT. This study uses a descriptive qualitative approach. The participants in this study were 10 master's students in educational technology who were in the process of writing their theses. Participatory observation and in-depth interviews were the data collection techniques used by the researcher. In addition, the data analysis techniques used were reduction, data presentation, and drawing conclusions. The results of this study indicate that master's programme students still need guidance in writing their theses through ChatGPT. This is because ChatGPT guidance can provide students with directions to minimise plagiarism and serve as a supporting tool for thesis writing. This guidance is not limited to face-to-face meetings but also includes guidance that can be used independently. Thus, self-regulated learning on ChatGPT can be an alternative for second-year master's programme students. With self-regulated learning on ChatGPT, students are expected to be able to manage an independent, focused, and continuous learning process in writing their theses.

Keywords: ChatGPT, Self-regulated learning, thesis, writing

1   Introduction

Higher education institutions are educational institutions that offer diploma, bachelor's, master's and doctoral programmes. Higher education institutions are also known as tertiary education institutions after secondary education[1][2]. However, to determine whether a higher education institution is of high quality, one indicator that can be used is the student completion rate. A timely completion rate reflects the effectiveness of the learning process, the academic guidance system, and the capacity of students to manage their studies. In Indonesia, the quality of higher education institutions is measured using Key Performance Indicators (IKU)[3]. One of these indicators is the on-time graduation rate, which can be monitored nationally. Delays in students completing their studies can have an impact on the quality of higher education institutions, indicating a weak academic guidance system. In addition, weak motivation and preparedness among students can also cause them to experience delays in completing their studies. This can

1540

also affect the image of higher education institutions that are less than optimal in supporting the completion of studies. This condition can cause problems for higher education institutions. As a result, the quality of education, the reputation of the institution, accreditation performance, and the competitiveness of higher education institutions will experience problems.

Previous studies have reviewed that higher education quality management is a systematic process to ensure that all aspects of higher education are carried out in accordance with established standards[4][5]. In addition, higher education institutions must also be able to improve quality on an ongoing basis. Higher education quality management includes planning, implementation, evaluation and improvement of various components of education. These components include the curriculum, learning processes, academic services, and the performance of lecturers and students. Therefore, indicators of the success of higher education management quality can encourage students to complete their studies on time. The quality of this management can be seen from the policies, academic systems, and learning facilities that support students in completing their final assignments efficiently. However, management with poor educational quality can result in suboptimal learning and guidance processes, which can lead to students extending their study period. To measure the quality of higher education management, there is the National Accreditation Agency for Higher Education (BAN-PT) as an independent evaluation institution formed by the government to determine the eligibility, improve the quality, and accredit universities and study programmes in Indonesia. In the BAN PT assessment, the on-time graduation rate is one of the main components in assessing institutional accreditation.

On the other hand, one of the challenges in managing quality assurance in higher education is the low rate of timely completion of master's degree programmes. According to Santoso et al. [6] at the *Universitas Terbuka*, out of a total of 132,734 students, only about 6.8% were able to graduate on time, while 67.3% graduated late, and 25.9% did not graduate at all. Therefore, these percentages show that the majority of students experienced delays in completing their studies. Aiken et al. [7] emphasises that the issue of untimely completion of studies is a serious challenge for universities. This delay is closely related to the challenges faced by master's programme students in writing their theses. Several previous studies have shown that the common obstacles encountered by master's programme students are lack of motivation, poor time management, difficulty in determining research focus, and limited academic writing skills [8][9]. These various obstacles are closely related to students' ability to apply Self-Regulated Learning (SRL) skills. SRL is a concept known as the process of managing oneself in learning activities. Thus, cognitively, SRL is an effort to independently monitor one's thoughts, feelings and behaviour in order to achieve these goals.

In writing a thesis, SRL skills are important for students to have because they are guided to be able to plan, monitor and evaluate the learning process independently. Essentially, SRL has three main phases, namely planning (students set goals and strategies), implementation (students manage their learning behaviour and monitor progress), and reflection (students evaluate results and develop improvement strategies). Therefore, students who lack SRL skills may experience delays in completing their studies. Studies that cannot be completed on time can increase prolonged academic stress[10][11][12]. To that end, improving SRL is necessary for students as a strategy for completing their theses within the specified time frame. Russel et al. [13]

1541

emphasises that improving students' SRL skills can facilitate the completion of research. In addition, SRL can also help students manage their time efficiently and consistently engage in self-reflection[14]. Onwubiko [15] emphasising that SRL can help students overcome their academic obstacles and support the completion of their studies.

In today's technological era, in addition to SRL skills, the use of technology is also needed in completing final assignments. One of the commonly used technologies is Artificial Intelligence such as ChatGPT. ChatGPT provides opportunities for students to search for information related to academics. Dwivedi et al.[16] explains that ChatGPT can be used as a tool to help students find new ideas, explain theories, develop research frameworks and provide feedback on their writing. With ChatGPT, students have a learning assistant that can be accessed at any time and can enrich the process of writing their thesis. However, without a clear pedagogical framework, the use of ChatGPT can pose risks. Instant and unguided use has the potential to weaken critical thinking skills, reduce the originality of work, and even create dependence that hinders the development of student learning independence [17][18]. Therefore, in order for the use of ChatGPT to remain in line with the concept of self-regulated learning (SLR), a ChatGPT-assisted SLR guide is needed that not only teaches the technical aspects of using artificial intelligence (AI), but also instils the principles of independent learning. This guide is expected to bridge the gap between technological potential and pedagogical needs: SRL serves as a framework to guide students to remain independent, while ChatGPT becomes a tool that reinforces this process. The integration of the two can help students plan, execute, and reflect on thesis writing more effectively, efficiently, and responsibly, while maintaining academic integrity. Thus, this research focuses on analysing the needs of master's programme students in writing theses with the help of ChatGPT.

ChatGPT remains an interesting area of research for academics, particularly as a learning tool in higher education. This is because ChatGPT makes it easier for students to understand course material, edit scientific papers and find sources of information to develop their arguments [19][20]. However, some studies have also analysed the risks of unguided use of ChatGPT. These risks relate to ethical issues, dependency on its use, and a decline in students' critical thinking skills [21][22]. Critical thinking skills can be improved through SRL. Several previous studies have reviewed that SRL can increase motivation, academic achievement and student learning independence [23][24]. Based on several previous studies, it can be seen that ChatGPT has both potential and risks. Meanwhile, studies related to SRL tend to focus on theoretical aspects and general applications without developing practical guidelines. Thus, several previous studies have not highlighted the integration of ChatGPT with SRL in a self-directed learning framework[25][5]. However, to date, several studies have limitations in that guidelines for using ChatGPT based on SRL principles have not yet been developed to support the writing of master's theses. Therefore, this study aims to analyse the needs of master's programme students in writing theses with the help of ChatGPT as a basis for designing guidelines for using ChatGPT based on SR.

1542

2   Method

This study aims to analyse the needs of master's programme students at universities in relation to ChatGPT in developing SRL skills. Therefore, a descriptive qualitative approach was used. The location of this study was the Educational Technology Study Programme, *Universitas Negeri Jakarta*. Participants in this study were selected according to the needs of the study using purposive sampling techniques. The criteria for selecting participants were based on experience, understanding, and willingness. Participants were first-year students who had completed 50% of their coursework and were in the process of writing their thesis proposals. In addition, participants had an understanding of and had used ChatGPT. Based on these criteria, there were 10 students who voluntarily agreed to participate in this study. According to Creswell [26] in qualitative research, the number of participants is considered sufficient when ranging from 5 to 25 people. Therefore, 10 participants in this study can be considered appropriate. The recruitment process was carried out through announcements in student groups and recommendations from supervisors, ensuring the confidentiality of participants' identities through the use of anonymous codes such as 'P1' to 'P10'.

The data collection technique in this study used a multi-method approach to obtain comprehensive data and triangulate sources. The main technique used was face-to-face or online interviews via platforms such as Zoom, with a duration of 45-60 minutes per session. Semi-structured interviews were chosen because they allowed flexibility in exploring participants' answers while remaining focused on the question guide. The interview guide covered themes such as: experiences using ChatGPT for self-directed learning (e.g., idea generation, thesis outline preparation, or language correction), specific needs in thesis writing (such as assistance with literature reviews or data analysis), challenges encountered (e.g., AI accuracy or ethics of use), and expectations for the development of AI-based self-directed learning. The questions were open-ended, such as 'How do you use ChatGPT in your thesis writing process?' and 'What are your main needs that this tool does not yet meet?' The interviews were recorded with the participants' permission and transcribed verbatim for further analysis. The researchers conducted indirect observations through analysis of ChatGPT usage logs shared by participants (if willing), such as screenshots of interactions with AI. This helped verify participants' claims regarding independent use. Observations were conducted ethically, focusing on general patterns without revealing personal data. The data collection process was conducted over a two-month period, from preparation to completion, to ensure depth of information. All data collection instruments were tested on two students outside the sample to ensure the clarity and relevance of the questions. To ensure the validity and reliability of the data, this study applied several validity testing techniques such as of trustworthiness, namely credibility, transferability, dependability, and confirmability. Source triangulation was conducted by comparing data from interviews and observations. After the interview transcripts were completed, participants were given the opportunity to review and confirm the contents of their transcripts. This ensured that the researchers' interpretations were consistent with the participants' intentions, thereby increasing the credibility of the data. Data analysis was conducted qualitatively using a thematic approach with six stages: data familiarization, initial code generation, theme search, theme review, theme definition, and report writing[27].

3   Results and Discussions

ChatGPT is an artificial intelligence technology that provides a variety of functional conveniences for its users. The findings of this study provide an overview of the participants' experiences using ChatGPT. In general, participants use ChatGPT as their main tool to support their learning. Eight out of ten participants have been using ChatGPT since they were undergraduates.

'I use ChatGPT to help me brainstorm ideas for my assignments' (P5, October 2025).

'I use ChatGPT quite intensively to search for information sources and generate ideas or topics related to my assignments. ChatGPT is like a discussion partner' (P1, October 2025).

The interview results show that the use of ChatGPT has benefits. Its presence can support the resolution of various problems and support the learning process. However, the convenience it offers can also reduce students' motivation to learn if it is not used appropriately and responsibly. The observation results also show that the participants' interactions with ChatGPT focused on content, language correction, and simple reference searches.

'ChatGPT is like a personal tutor who is always available. This makes me study more independently because of the instant feedback I get.' (P9, October 2025)

The interview results are supported by a study conducted by Marlin et al.[28] which found that ChatGPT, as an implementation of artificial intelligence (AI) technology, is a computer program designed to mimic the way the human mind works so that it can complete various tasks more efficiently than humans. Moreover, in 2024, the latest version of ChatGPT is ChatGPT 4o (Omni), which was launched on 13 May 2024. This update includes feature enhancements such as the ability to analyse documents and images, as well as a faster response process compared to previous versions such as ChatGPT 3.5 and 4.0, which are available in subscription versions. This pattern is in line with findings that postgraduate students in Indonesia use ChatGPT for drafting and editing, integrating it into their daily workflow. Needs analysis reveals that participants need ChatGPT support mainly to overcome time and resource constraints. The use of ChatGPT in an academic context can vary: from designing thesis structures, providing writing feedback, to helping brainstorm ideas and rephrasing concepts in simple terms. Jo [29] in a comprehensive study mentions that ChatGPT supports personalised learning, allowing students to obtain explanations according to their needs and accelerating the understanding process (factor requirements), even though obstacles such as privacy and guilt due to AI use still arise. However, the gap between AI adaptability and pedagogical integration that guarantees the authenticity of student learning still needs to be filled. Therefore, this study analyses student needs related to ChatGPT.

'I need ChatGPT to summarise international journals because access to the UNJ library is limited, but this AI is sometimes inaccurate for the local Indonesian context.' (P4, October 2025)

The interview results show that there are still obstacles in using ChatGPT. In addition to being inaccurate, a review by Bai et al. [17] raises concerns about the uncontrolled use of ChatGPT, particularly in relation to academic authenticity, untraceable plagiarism, and the need for clear ethical policies on global campuses. From a perceived

1544

risk perspective, another study concluded that students' perceptions of Perceived Academic Dishonesty (PAD) are negatively related to the frequency and intention to use ChatGPT and risk-aware students tend to use ChatGPT more selectively. Overall, ChatGPT offers a number of opportunities to accelerate the learning and academic writing processes, but it cannot be used without pedagogical guidance. Without a usage design that supports academic independence and responsibility, ChatGPT can jeopardise the development of critical thinking, academic integrity, and students' independent learning processes[30].

Pedagogical needs also arise, where students want ChatGPT to support self-directed learning through prompts that encourage reflection[31]. P5 stated, 'I want this AI to ask back questions like "what do you think about this theory?" so that I don't just copy and paste.' This reflects the need for more dialogic interactions, which can enhance critical thinking. At UNJ, where master's students often work part-time, this need is crucial for efficiency. These findings are supported by studies showing that EFL students in Indonesia use ChatGPT for idea generation and organisation, fulfilling their academic writing needs[32].

'ChatGPT often gives general answers, not specific to education regulations in Indonesia, forcing me to verify manually.' (P10, October 2025)

'I am afraid my thesis will be accused of plagiarism if I rely too much on ChatGPT, even though I paraphrase.' (P8, October 2025).

The interview results indicate challenges in using ChatGPT. These challenges hinder independent learning, as participants feel less confident. Participants hope for the development of ChatGPT that is more integrated with the UNJ education ecosystem, such as collaboration features with lecturers or prompt training modules. Add thesis progress tracking features, such as reminders for which chapters are not yet completed.

The results of this study enrich our understanding of the role of ChatGPT in self-directed learning among master's students at UNJ, particularly in thesis writing. This discussion links the findings with theory of Self-Directed Learning (SDL), which emphasises personal initiative, needs diagnosis, and self-evaluation[33]. In this context, ChatGPT functions as a facilitator of SDL, enabling students to manage their learning process autonomously. The pattern of using ChatGPT as a brainstorming and content generation tool is in line with studies that found that postgraduate students use AI to support writing purposes, such as idea seeking and language refinement. At UNJ, where students often face high workloads, this use increases motivation, transforming initial curiosity into task motivation, as reported in similar studies. One of the theoretical approaches widely used to understand this process is social cognitive theory, which emphasises that self-regulation in learning is not only influenced by internal or personal factors, but also by the dynamic interaction between the environment and the individual's behaviour[34]. Wolters and Brady [14] explains that self-regulated SRL is an active and constructive learning process, in which learners consciously set their learning goals and monitor, control, and direct their cognitive, motivational, and behavioural aspects in order to achieve those goals in a specific learning environment. This self-regulation process serves as a link between individual characteristics and the learning environment context, and contributes to academic achievement.

Furthermore, Lin and Dai [34] added that learners who regulate themselves effectively need to have cognitive knowledge as a foundation, metacognitive abilities to

select and monitor learning strategies, and motivational drive to use these strategies consistently in understanding learning materials. SRL model shows that effective learning involves a continuous process that includes planning, implementation, and evaluation. These three phases are interrelated to help individuals better manage and direct their learning processes. Motivation plays an important role in maintaining the sustainability and effectiveness of the SRL process. The self-reflection stage helps individuals adjust their strategies to improve future learning outcomes in a more focused manner. The integration of SRL and the use of artificial intelligence technologies such as ChatGPT is a new approach that is increasingly relevant in the context of higher education. SRL is an active and constructive process in which students set learning goals and consciously monitor, regulate, and evaluate their own cognition, motivation, and behaviour in order to achieve those learning goals [35]. Within the SRL framework, students are required not only to understand the learning material, but also to be able to manage their learning strategies independently with good metacognitive and regulatory skills.

Meanwhile, ChatGPT, as a form of artificial intelligence (AI) based on Natural Language Processing (NLP), can provide significant cognitive support in the independent learning process. ChatGPT is capable of responding to questions, providing explanations, and even giving instant feedback on academic concepts. With these capabilities, ChatGPT can assist students in carrying out the SRL process, especially in the performance and self-reflection phases, where students need help monitoring their understanding, evaluating learning strategies, and correcting mistakes in their academic process. However, the use of ChatGPT also has challenges. The ease of access and speed of obtaining information through ChatGPT can make students passive and dependent if not accompanied by good self-regulation awareness. Therefore, proper integration between AI-based tools such as ChatGPT and SRL principles is necessary so that its use can encourage independent learning rather than diminish it.

This integration includes providing clear guidance on how to set specific goals when using ChatGPT, strategies for monitoring understanding through reflective questions, and critically evaluating the results of interactions with AI. The results of this study are in line with Wu et al. [35], who found that students who applied SRL when using AI tools showed deeper understanding and higher learning engagement compared to those who only used AI passively. Similar research by Luo and Zhou [23] shows that when students are guided to use ChatGPT within an SRL framework, they are better able to plan strategies for academic writing, including dissertations and theses. Thus, the integration of ChatGPT into the SRL context is not merely a technical issue or a matter of technological preference, but rather a pedagogical effort to guide students to remain active in the process of thinking, questioning, and developing understanding independently. The use of ChatGPT without an SRL framework can lead to dependency and a decline in students' academic quality. Therefore, guidelines for using ChatGPT based on SRL principles are crucial in promoting learning effectiveness and study completion, particularly during the thesis writing stage at the master's level.

4   Conclusion

This study concludes that students require guidance on using ChatGPT that is integrated with SRL principles. Therefore, ChatGPT and SRL are not two separate approaches, but rather can complement each other. Integrating the two can produce a learning model that not only supports the improvement of academic writing skills, but also fosters learning autonomy and maintains the scientific integrity of students. Thus, developing guidelines that combine SRL principles and the use of ChatGPT is a strategic step to strengthen the quality of learning in the digital era, including in the context of thesis writing. Along with the development of technology, various tools have emerged that can be utilised in the learning process, one of which is ChatGPT, an artificial intelligence based on a large language model developed by OpenAI. ChatGPT allows users to interact via text to obtain information, answer questions, and even produce academic writing. In the context of higher education, ChatGPT has been widely used by lecturers and students to support the learning and research processes. This research has implications for higher education institutions, where this guide will not only contain technical instructions for using ChatGPT, but also include SRL strategies that help students manage their goals, time, motivation, and develop their metacognition in using AI assistance. With this guide, it is hoped that students will not only become intelligent users of technology, but also reflective, independent learners who are responsible for their academic process. The limitations of this research include a small sample size (10 people) and a focus on UNJ, thus limiting its generalisation. Further research could involve quantitative methods to measure the impact on thesis quality. Overall, ChatGPT has the potential to transform independent learning in thesis writing, but requires a balanced approach to maximise benefits and minimise risks.

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