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# Examining Self-Assessment of Student Teachers' Self-Directed Learning: A Case Study at Battambang Teacher Education College, Cambodia

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## Abstract

This case study, a collaborative investigation into the self-assessment of student teachers' self-directed learning in the Battambang Teacher Education College (BTEC) teacher education program, provides valuable insights. The study employs both quantitative and qualitative analyses. Data was collected through surveys and open-ended questions with 187 BTEC student teachers. The findings revealed that student teachers actively engaged in reflective self-assessment practices, enabling them to identify improvement areas and develop personalized learning strategies. However, limited time, lack of mentorship, and inadequate institutional support could have helped their ability to fully direct their learning. The study provides practical recommendations to BTEC program administrators on enhancing the support and resources offered to student teachers, such as increasing mentorship opportunities and improving institutional support, to promote their autonomous learning and professional development. These recommendations are designed to be actionable and can be implemented to improve the BTEC teacher education program. The collaborative research contributes to the ongoing efforts to improve teacher education and equip future educators to meet the evolving demands of the modern classroom, making the audience feel included and part of the solution.

**Keywords:** Self-Assessment, Self-Directed Learning, Independent Learner, Andragogy, Constructivism

## 1. Introduction

### 1.1. Present of the Problems

The BTEC program, known for its innovative approach to teacher education that focuses on self-assessment and self-directed learning, is essential in addressing this global need. Student teachers in the BTEC program have a crucial role in influencing the quality of instruction and learning in the classroom, making them key figures in the future of the teaching profession. To effectively handle the challenges of this ever-changing position, student

teachers must actively participate in ongoing self-evaluation and self-guided education, cultivating a mentality focused on personal improvement that propels their professional advancement (Mezirow, 1991; Schön, 2017). Self-assessment is the process of evaluating one's performance based on predetermined criteria. It enables student teachers to critically analyze their teaching practices, identify areas that need development, and build specific plans for personal growth (Andrade & Valtcheva, 2009; Seifert & Feliks, 2019; Sejati et al., 2020; Yan et al., 2023). Reflective practice is widely recognized as an essential component of effective teacher development (Liu & Ball, 2019; Nuraeni & Heryatun, 2021; Slade et al., 2019). It enables student teachers to identify strengths and weaknesses and the impact of their learning (Rodgers, 2002; Zeichner & Liston, 2013).

Self-directed learning is the act of individuals taking the initiative to analyze their learning requirements, set goals, find resources, select and use suitable tactics, and assess the results of their learning (Dewi et al., 2019; Nasri, 2019; Van D. W., 2019). This student-centered approach is especially appropriate for student teachers since it enables them to customize their professional development according to their needs and objectives, promoting ownership and control over their advancement (Baumgartner, 2011; Hagger & McIntyre, 2006). By combining these two essential processes, student teachers can actively participate in a dynamic and transforming learning experience, fostering a profound comprehension of their teaching practice and promoting ongoing enhancement (Damianakis et al., 2019; Heilporn et al., 2021; Mezirow, 1991; Schon, 1987). This study investigates the analytical methods that student teachers can use to effectively utilize self-assessment and self-directed learning, thereby improving the quality of teaching and learning in the classroom (Arefian, 2022; Lubbe et al., 2021; Sosibo, 2019; Tlili et al., 2022). The significance of this subject cannot be exaggerated since the cultivation of proficient and thoughtful educators is not only necessary but indispensable for the triumph of educational systems globally. Student teachers may effectively traverse classroom challenges by incorporating self-assessment and self-directed learning (Brazeo, 2024; Papanthymou & Darra, 2023; Vareberg, 2021). This approach empowers them to control their learning and become catalysts for positive change. It also promotes a culture of ongoing development, leading to improved outcomes for their students (Johnson et al., 2023; Mahoney et al., 2021).

The self-assessment of self-directed learning among student teachers is crucial for identifying gaps in their perceived and actual learning capabilities, helping to inform the development of more effective teacher training programs (Malcolm Shepherd, 1975; Philip C., 1991). Exploring how student teachers evaluate their self-directed learning can reveal insights into their learning processes and self-perceptions, which are essential for personal and professional growth (Zimmerman, 2002). Additionally, understanding the factors that either support or impede self-directed learning, such as intrinsic motivation, prior experiences, and institutional support, is vital for creating a conducive learning environment (Deci & Ryan, 2000; Garrison, 1997). By analyzing these dimensions, educational institutions can implement targeted strategies that enhance self-directed learning among student teachers, ultimately leading to significantly improved academic outcomes (Brockett & Hiemstra, 2018). This prospect should inspire hope and motivation in all of us.

The current corpus of research on self-assessment and self-directed learning among student teachers establishes a solid basis for this study. Multiple studies have investigated the influence of reflective practices on the professional growth of preservice and inexperienced teachers (Choy et al., 2019; Dumlao & Pinatacan, 2019; Kulgemeyer et al., 2021). Korthagen and Vasalos (2005) and Özüdogru (2021) investigated the application of "core reflection," a comprehensive method of self-evaluation that prompts student teachers to examine their beliefs, emotions, and actions in the classroom. Their research indicates that engaging in this reflective process can substantially impact teaching effectiveness and foster a more profound sense of professional identity. Zeichner and Liston (2013) have also highlighted the significance of cultivating reflective teaching habits. They argue that this practice allows student teachers to adjust their instructional methods to suit the specific requirements of their pupils (Beninghof, 2020; Fischer & Hänze, 2019; Roberts & Inman, 2023).

Moreover, studies by Mezirow (1997) and Baumgartner (2011) have emphasized the profound capacity of self-directed learning to bring about transformation. These studies have shown how this student-centered approach can enable aspiring teachers to assume responsibility for their professional development and participate in significant, situation-specific learning (Caulfield, 2023; Drotar, 2019; Pan et al., 2024). This study project explores the

analytical tools that student teachers might use to optimize the combined advantages of self-assessment and self-directed learning based on existing theories and empirical data.

The findings of this research were shared with the BTEC program administrators, together with precise suggestions for improving the assistance and resources provided to student teachers to promote their autonomous learning and professional growth. This study links the research objectives with the requirements of the BTEC program to contribute to the continuous efforts to enhance the standard of teacher education and effectively equip future educators to tackle the demands of the modern classroom. There were two main research questions were asked to verify the research objective of the study:

1. How can we examine the self-assessment of student teachers' self-directed learning in the program?
2. What factors either support or impede the self-directed learning process among student teachers?

In the survey results, we aim to provide practical recommendations to BTEC program managers to enhance the support provided for student teachers' independent study. These recommendations will be based on student teachers' authentic experiences and needs, making them highly relevant and actionable.

## 1.2. Literature Review

### 1.2.1. Foundations of Andragogy and Constructivism

In the 1970s, Malcolm Knowles introduced andragogy, which is how adults learn. This is different from pedagogy, which focuses on teaching children. Principles of andragogy include: first, adult learners prefer to self-identify their learning requirements, create goals, and evaluate their progress (Boggs, 2021; Housel, 2020; Scholtz, 2024). With their life experiences, adults improve the learning environment and deepen comprehension. When the knowledge is relevant to their personal or professional lives, they are more driven to learn, displaying a practical readiness (Manasia et al., 2019; Morris, 2019; Rusilowati & Wahyudi, 2020). Adult learners also focus on real-world problems rather than abstract principles (Fenwick & Tennant, 2020; Rothwell, 2020). In conclusion, andragogy stresses mutual respect and autonomy since adults want their prior knowledge acknowledged and to participate in their learning actively. Andragogy promotes a collaborative and flexible learning environment that meets adult learners' requirements and incentives (Coley, 2022; Lewis & Bryan, 2021; Rahmawati & Hiryanto, 2023).

While it is not to say that children do not possess these attributes, they are typically more pronounced in adults. The terms 'pedagogy' and 'andragogy' correspondingly highlight the specific methodologies required for instructing children and adults (Cormack, 2021; Loeng, 2023; Subba, 2019; Tezcan, 2022). The core principle of andragogy is that adult learners are autonomous and responsible for their Education (Wilcox, 1996). They achieve this by identifying their learning needs, setting educational goals, creating a study plan, selecting appropriate learning resources, implementing their plan, and evaluating their progress. Adult learners often choose self-assessment to gauge their development (Sosibo, 2019; Van Loon, 2019; Z. C., 2019), and they highly value the ability to control their learning pace (Carter Jr et al., 2020; El-Sabagh, 2021).

Adult learners are generally self-reliant and can control, observe, and enhance themselves. This sets them apart from youngsters, who usually depend more on their teachers for direction and instruction (Kallick, 2004). Moreover, constructivism and andragogy have a significant association since both frameworks prioritize and highlight the need for active engagement in teaching and learning (Khadimally, 2021; Loudonback, 2019; Smith, 2023). Both techniques involve learners actively constructing and generating knowledge rather than simply absorbing it passively (Ma, 2023; Roe, 2023). This principle also applies to self-evaluations. Du Toit-Brits (2019) and Ahammad (2023) explained that self-directed learning (SDL) is a crucial element of constructivism and andragogy, underscoring its fundamental importance in this topic. Hence, this article employs SDL as its analytical unit, highlighting its significance in educational frameworks (Glassman, 2001). This examination demonstrates the distinct qualities of adult learners and the correlation between andragogy and constructivism, emphasizing the significance of self-directed learning (SDL) in promoting compelling learning experiences for adults.

### 1.2.2. Conceptualizing Self-Assessments

According to Brown and Harris (2014), self-assessment is how students describe and evaluate their work and academic ability. This concept goes beyond giving grades or scores; it includes a thorough assessment of an individual's learning process (Boud, 1995). The primary purpose of self-evaluation is to enhance learning and promote personal development and growth (McNamara et al., 2022; Vera et al., 2019; Z. C, 2019). Traditional evaluation focuses on outcomes, while self-assessments allow students to take control of their educational journey and establish their voices in the teaching-learning process (Alghanmi, 2023; Bourke, 2016; Taras & Wong, 2023). Self-assessment utilizes techniques and approaches that allow students to analyze and assess their learning experiences and outcomes (Ernesto Panadero, 2016; Ifenthaler et al., 2023; Karaman, 2021; Tashiro et al., 2021; Yan, 2020).

Knowles (1975). Vergara et al. (2020) and Lavrentieva et al. (2019) emphasize a process in which learners recognize their requirements, establish educational objectives, actively search for resources, select efficient learning methods, and independently or collectively assess their outcomes. He proposes that portfolios are crucial in cultivating self-directed learning (SDL) abilities, enabling students to record and substantiate their educational advancement. Schumacher et al. (2019), Mauck (2022), and Dreisiebner and Slepcevic-Zach (2019) mentioned that portfolios can have different forms and purposes, including electronic and non-electronic collections. Showcase portfolios emphasize the presentation of completed work to an audience while learning portfolios capture the process of acquiring knowledge and skills (Kihwele et al., 2024; Nuryanto et al., 2024). The significance of SDL in adult education is notable, especially in its focus on how individuals acquire knowledge and skills in different life roles, such as being a parent, employee, or citizen (Roy, 2019; Šatienė, 2021; Vithayaporn et al., 2021).

Remote learning environments and suggested learning advisory networks also augment this form of learning by offering essential assistance (Bouchev et al., 2021). Heidi Andrade (2014) demonstrates that students are prompted to critically evaluate their work and explore options for development through hands-on experiences and self- and peer assessment, emphasizing the crucial role of reflection in self-evaluation. Furthermore, the literature suggests that self-directed learning fosters the development of critical thinking, introspection, and the ability to continue learning throughout one's life (Avsec & Jagiełło-Kowalczyk, 2021; Charokar & Dulloo, 2022). The connection between self-assessment and self-directed learning (SDL) is strengthened by their shared emphasis on a student-centered approach, enabling students to assume responsibility for their Education (Len & Tieme, 2022; Rui et al., 2024; Warnick, 2018). This thorough research highlights the significance of self-evaluation and self-directed learning (SDL) in promoting active, independent learners who can navigate their educational journeys (Kharroubi & ElMediouni, 2024; Perera, 2022).

### 1.2.3. Reflecting on Self-Assessment and Self-Directed Learning

Supporting students' learning is a crucial objective of self-assessment. This is especially crucial if and when formatively using self-assessment as a learning method (Taras, 2010). Self-assessment has three objectives: to measure the material or subject matter mastery, to show that learning objectives and results have been met, and to encourage learners' personal growth (Andrade, 2019; Chung et al., 2021; Sosibo, 2019). Out of the three, we believe that personal development—which is a critical component of SDL—is the ultimate aim of self-assessment (Groen et al., 2020; Lyonga, 2022; Taylor et al., 2023; Wride, 2017).

Self-Directed Learning (SDL) is a foundational concept in adult education, emphasizing the autonomy and initiative of learners in managing their educational processes (Gharti, 2019; Morris, 2019; Supe et al., 2024). Knowles (1975) defines SDL as a process where individuals take responsibility for their learning by diagnosing their needs, setting goals, and evaluating their progress. Candy (1991) expands on this notion, highlighting that SDL is not just about learning but about empowerment for lifelong learning, enabling individuals to adapt their learning strategies over time. Owen (2002) offers a critical perspective, arguing that while SDL is empowering, learners must also navigate the challenges of self-directedness within societal constraints. Garrison (1997) supports the importance of a learning environment that fosters critical reflection and collaborative discourse, which is

essential for enhancing learners' SDL capacities. Sarkın and Seçkin (2023) highlight the necessity of creating conditions supporting SDL to facilitate effective independent learning.

Moreover, Zimmerman (2002) discusses self-regulation as integral to SDL, emphasizing the need for effective goal-setting and self-evaluation. Usher and Schunk (2017) further explore how self-efficacy beliefs influence learners' SDL by affecting their motivation and persistence. Grow (1991) introduces a developmental model of SDL, outlining how educators can guide learners through varying levels of self-direction. In addition, Merriam and Brockett (2011) emphasize the practicality of SDL in adult education contexts, noting that it aligns with the practical needs of adult learners. Finally, Davis et al. (2010) provide empirical evidence of SDL's prevalence among adults, showcasing various informal learning strategies. Together, these studies illustrate that SDL is a critical component of adult learning theory and essential for fostering independent, lifelong learners.

## **2. Method**

### *2.1. Research Design*

Based on the findings, the survey aims to examine student instructors' self-directed learning and offer recommendations to BTEC administrators. For this study, 200 student teachers from Battambang Teacher Education College are expected to participate. The survey was designed to comprehensively investigate student teachers' self-directed learning behaviors and develop a study methodology to evaluate the impact of self-assessment and self-directed learning on their professional development. This thorough approach ensures the validity and reliability of our research findings. The study utilized a research approach involving surveys to investigate the self-directed learning practices of student teachers enrolled in the BTEC program.

### *2.2. Participant*

The study focuses on 250 student teachers studying in the BTEC program as the target group. The recruitment of participants utilized a convenience sample method, whereby the survey was given to all student teachers via the Google form. At least 200 student teachers are anticipated to participate in the survey, yielding a substantial and comprehensive dataset for analysis. The data collection method involved 187 student instructors, slightly less than the expected number of 200 participants. However, the high participation percentage of 93.5% ensures that this sample size is more than adequate for statistical analysis. Therefore, the analyst can proceed with the study, confident that the results will provide significant insights into the larger population of student instructors.

### *2.3. Research tool*

The researcher developed a comprehensive survey to assess self-directed learning among student teachers, adapting items from the Self-Directed Learning Readiness Scale (Guglielmino, 1977) and the Self-Directed Learning Measurement Scale (Cheng et al., 2010). The survey includes questions based on established frameworks, such as Garrison's self-directed learning model (1997). It consists of three sections: demographic information (including gender, specialization, and teaching background), self-assessments of self-directed learning experiences, and perspectives on factors influencing the self-directed learning process. The assessment measures the participants' abilities to identify educational needs, set objectives, select appropriate learning methods, and evaluate their progress. A total of twenty items were adapted, and three experts evaluated their validity, resulting in the elimination of two unacceptable items. The Cronbach's Alpha, which measures internal consistency, was calculated at 0.91 based on responses from 116 participants, indicating excellent reliability among the remaining 18 items. This high value suggests a strong positive relationship among the items, effectively measuring the same underlying construct.

### *2.4. Data analysis*

The survey data were analyzed using both quantitative and qualitative methods. A comprehensive examination of descriptive statistics, including frequencies, means, and standard deviations, described the student teachers' self-directed learning behaviors and perspectives. The open-ended responses from the last section of the survey were analyzed thematically. This analysis enables the researchers to discover significant themes and patterns in the ideas made by student teachers to improve the program. The qualitative insights add context and depth to the quantitative findings, resulting in a thorough knowledge of the self-directed learning experiences in the BTEC program.

### 3. Results

The survey revealed significant findings regarding the research objective—the quantitative and qualitative findings are presented in the following section.

#### 3.1. Demographics of the respondents

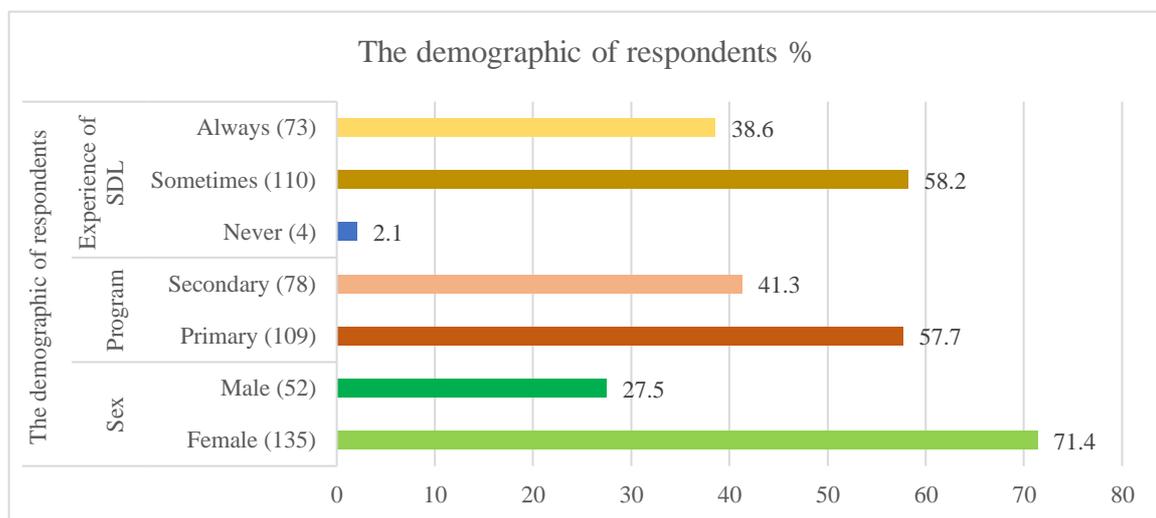


Figure 1: The demographic of respondents as a percentage

Figure 1 demonstrates that the analysis reveals significant insights into the participants' experiences and backgrounds regarding self-directed learning (SDL). A majority, comprising 58.2%, indicated that they engage in SDL "sometimes," while 38.6% reported "always" applying these principles, suggesting a generally favorable attitude towards SDL practices among respondents. Conversely, a minimal 2.1% of participants claimed to "never" engage in SDL, highlighting a potential area for further educational intervention. The academic background of the respondents shows that 57.7% have completed primary education, whereas secondary education holders represent 41.3%, indicating a diverse educational landscape that might influence their SDL engagement. Gender representation is notably biased, with female respondents at 71.4%, compared to 27.5% male respondents. This disparity raises questions regarding gender-specific engagement rates and preferences related to SDL. Overall, the data indicates a promising propensity towards SDL and underscores the need for tailored educational approaches that consider demographic influences to enhance learning outcomes effectively.

#### 3.2. The Degree of Student Teachers Implement Their SDL

The data indicates varying Self-Directed Learning (SDL) implementation levels, categorized by percentage ranges. Most participants, 109 out of 187, reported SDL implementation within the 50-75% range, suggesting a strong inclination toward incorporating SDL practices in their learning environments. The second highest percentage (34.22%) falls within the 25-50% range, indicating that while SDL is recognized, there remains substantial room for improvement in its integration. This finding underscores the urgent need for further development in educational practices, emphasizing the importance of the work of educators and researchers in this field. Conversely, only 6 participants (3.21%) reported minimal implementation (10-25%), suggesting a negligible reliance on SDL approaches. Notably, the 75-100% category received a low response rate of 8 participants (4.28%), highlighting

that achieving full SDL implementation may be challenging. Overall, these findings reflect a predominance of moderate SDL utilization, pointing to a potential area for further development in educational practices.

### 3.3. Student Teachers' Self-Assessment on Self-Directed Learning

Table 1: Indicating Student Teachers' Perception of their SDL

Items	Descriptive analysis					Mean	SD	
	S-D	Dis	N	Agree	S-A			
Q1	I know what I need to learn.	0	4	20	148	15	3.93	0.98
Q2	Regardless of the result or effectiveness of my learning, I still like learning.	1	1	12	134	39	4.00	0.93
Q3	I want to constantly improve and excel in my learning.	0	2	2	151	32	4.06	0.82
Q4	My successes and failures inspire me to continue learning.	0	0	7	120	60	4.23	0.70
Q5	I enjoy finding answers to questions.	0	1	24	136	26	3.64	0.85
Q6	I will not give up learning because I face some difficulties.	0	0	6	102	79	4.34	0.73
Q7	I can proactively establish my learning goals.	0	3	27	131	26	3.76	0.88
Q8	I know what learning strategies are appropriate for me in reaching my learning goals.	0	6	41	129	11	3.59	0.94
Q9	I set the priorities of my learning.	0	3	32	140	12	4.06	0.80
Q10	In the classroom or on my own, I can follow my plan of learning.	0	5	33	142	7	3.74	0.82
Q12	I know how to find resources for my learning.	0	13	51	114	9	3.27	1.14
Q13	I can connect new knowledge with my personal experiences.	0	8	25	144	10	3.59	0.96
Q14	I understand the strengths and weaknesses of my learning	0	7	22	130	28	3.70	0.88
Q15	I can monitor my learning progress.	0	5	29	138	15	3.71	0.87
Q16	I can evaluate my learning outcomes.	0	9	32	135	11	3.58	0.82
Q17	My interaction with others helps me plan for further learning.	0	4	24	136	23	3.71	0.93
Q19	I can express messages effectively in oral presentations.	1	20	65	94	7	2.98	1.06
Q20	I can communicate messages effectively in writing.	0	9	51	120	7	3.43	0.87
Total		2	100	503	2344	417	3.74	0.89

Table 1 shows the results from the survey assessing self-directed learning (SDL) among student teachers, revealing significant insights into their perceptions and readiness for independent learning. The overall mean score of 3.74 (SD = 0.89) reflects a generally positive attitude towards SDL, indicating that many respondents feel confident in their learning abilities. Notably, item Q6, which states, "I will not give up learning because I face some difficulties," received the highest mean score of 4.34 (SD = 0.73), suggesting a solid resilience and commitment to overcoming challenges in their educational journey. In contrast, item Q19, related to the ability to express messages effectively in oral presentations, garnered the lowest mean score of 2.98 (SD = 1.06), indicating a significant area of concern where student teachers may feel less competent, potentially hindering their overall learning experience. The data also highlight that while participants generally recognize the importance of setting



learning goals and monitoring their progress, as shown in items Q7 (mean = 3.76) and Q15 (mean = 3.71), there is an urgent need for further development in understanding and applying appropriate learning strategies (Q8, mean = 3.59). These findings underscore the necessity for targeted interventions, particularly in communication skills, to enhance the effectiveness of self-directed learning and empower student teachers to navigate their educational paths more effectively.

### 3.4. The Main Factors that Either Support or Impede the Self-directed Learning Process among Student Teachers

Table 2: Showing the theme of student teachers' comments on SDL

Themes	Frequency
Practice SDL (Q2)	
Self-Discipline and Goal Setting	7
Planning and Scheduling	5
Research and Resources	3
Focus Areas (Q3)	
Knowledge Acquisition	8
Skill Development	5
Self-Discipline	4
Improvement Conditions (Q4)	
Goal Orientation	6
Time Management	4
Support Structures (Mentorship, Peers)	3
Opportunities and Challenges (Q5)	
Opportunities for Growth	
Gaining Knowledge	5
Independence in Learning	4
Self-Improvement	3
Challenges	
Stress Levels	4
Time Constraints	3
Lack of Guidance	5
Impact on Performance (Q6)	
Academic Improvement	6
Increased Self-Awareness	4
Skill Enhancement	3

Table 2 shows an analysis of Self-Directed Learning (SDL) themes conducted by administering five open-ended questions to student teachers at BTEC. The results highlight many critical areas of concentration that are of utmost importance and have practical implications for the teaching profession. The initial query is to determine how student teachers implement their self-directed learning (SDL). Furthermore, the specific areas of concentration for their SDL are also important. Furthermore, what distinguishes them as superior in the field of SDL? Next, inquire about SDL's potential advantages and difficulties, and then explore how SDL influences their academic achievements. The qualitative data comprises only comments that address the research question, "What are the primary factors that either facilitate or hinder student teachers on self-directed learning (SDL)?" Additional remarks were omitted for diverse reasons. The pertinent answers can be located in the following questions.

#### 3.4.1. How do student teachers practice self-directed learning (self-study)?

The themes about good student practices emphasize the crucial roles of self-discipline and goal planning as fundamental components of academic achievement. Students often emphasize the crucial role of determination, stating, "*We must be determined.*" The comment demonstrates their shared understanding of the significance of dedication in their academic pursuits. In addition, they stress the importance of "exercising discipline in performing a task" as a crucial aspect, emphasizing self-control as a critical element in attaining their learning goals. The concept is strongly linked to efficient planning and scheduling, which students recognize as crucial for managing their academic obligations. The need for organization is apparent in phrases such as "*Establish a daily timetable for each subject*" and "*Develop a study plan,*" both of which demonstrate the systematic methods necessary to

manage one's studies [5] effectively. In addition, it is crucial to have the capability to obtain pertinent information and resources. Students emphasize the need to employ various methods, as evidenced by their references to *"Online research in the library"* and *"Find video tutorials."* The supporting quote highlights the crucial role that diverse resources play in facilitating self-directed learning, enhancing the entire educational experience, and promoting a complete approach to academic success [3]. Together, these themes communicate a subtle comprehension of the actions and tactics contributing to efficient student practices, highlighting the interconnectedness of discipline, preparation, and resourcefulness in fostering successful learners.

#### 3.4.2. What do student teachers practice in self-directed (self-directed) learning?

The focus areas identified among students illuminate essential components necessary for academic success, centering on knowledge acquisition, skill development, and self-discipline. Students emphasize the significance of knowledge acquisition, with frequent assertions such as *"Spend more time studying"* and *"Get new knowledge,"* which highlight a fundamental understanding that time dedicated to learning is directly correlated with academic improvement [8]. This acknowledgment suggests that students recognize the investment of effort as a pivotal factor in their educational outcomes. Moreover, the theme of skill development emerges prominently, where students express a proactive commitment to refining their abilities, evident in statements like *"Focus on skill development"* and *"Develop yourself as a disciplined person."* This proactive stance indicates a growing awareness of the necessity for continuous personal growth in response to evolving academic and professional environments [5].

Additionally, self-discipline is repeatedly identified as a cornerstone for achieving these goals, with phrases such as *"Self-discipline is important for success"* and *"You need to have self-discipline,"* underscoring its critical role in sustaining academic efforts and fostering personal growth [4]. Collectively, these focus areas offer a comprehensive framework that prioritizes not only acquiring knowledge but also enhancing skills and cultivating discipline, which equip students to navigate the complexities of their educational journeys effectively. This integrated approach underscores the interconnectedness of these elements in promoting holistic academic development and success.

#### 3.4.3. What are the conditions for student teachers to become better self-directed learners?

The improvement conditions identified by students reveal essential factors that facilitate academic progress, prominently featuring goal orientation, time management, and support structures. A robust goal orientation is fundamental to effective learning, as evidenced by students' emphasis on the necessity for clarity in their academic pursuits. Phrases such as *"Set clear goals for studies"* and *"Focus on achieving specific outcomes"* underscore the correlation between well-defined objectives and successful learning outcomes [6]. This clarity is a motivational tool that guides students toward their academic aspirations. In addition to goal orientation, effective time management is frequently recognized as crucial for success. Students articulate this necessity through comments like *"Manage your time effectively"* and *"Time management is crucial for success,"* illustrating how well-organized schedules can maximize productivity while minimizing stress and burnout [4].

Furthermore, the importance of support structures—particularly mentorship and peer relationships—emerges as a significant component of the academic experience. Students often highlight the collaborative benefits of these networks, as seen in quotes like *"Seek help from peers or mentors"* and *"Support from teachers and friends."* The supporting quote underscores the intrinsic value of community in creating a supportive learning environment where students can collectively thrive and address academic challenges [3]. Together, these improvement conditions form a comprehensive framework that enhances academic performance and fosters personal development, enabling students to navigate their educational journeys more effectively.

#### 3.4.4. What opportunities and challenges do student-teachers receive when conducting self-directed learning?

The discussions surrounding opportunities and challenges in the learning experience underscore its dual nature, particularly regarding growth potential in knowledge acquisition, fostering independence, and pursuing self-

improvement. Students frequently highlight opportunities for enhancing their skills, expressing sentiments such as *“Opportunities to acquire better skills”* and *“Gain knowledge through self-study.”* These statements reflect a recognition that proactive learning initiatives significantly contribute to academic advancement [5]. Moreover, the emphasis on independence in learning reveals a critical dimension of educational development; students articulate the value of self-directed study, as illustrated by quotes like *“Have the opportunity to study independently”* and *“Independent learning is critical.”* The quote underscores the importance of autonomy, which empowers students to take charge of their educational journeys and encourages more profound engagement with the material [4].

Additionally, the theme of self-improvement is prominent as students express their commitment to personal development. Phrases such as *“Focus on self-improvement”* and *“Self-directed learning promotes growth”* highlight their intrinsic motivation to evolve both academically and personally through deliberate effort and introspection [3]. Together, these elements construct a comprehensive narrative of the opportunities that propel students toward growth while concurrently acknowledging the challenges they face in navigating their educational paths. This interplay between opportunity and challenge fosters a dynamic learning environment crucial for developing resilient and self-motivated learners.

#### 3.4.5. How does self-directed learning (self-study) improve student teachers' academic performance?

The theme of impact on performance delineates the profound influence that students' learning approaches have on their academic outcomes. A notable benefit of self-directed study is academic improvement, as students assert that *“Self-directed study improves results”* and observe that *“Academic performance increases with better planning.”* These assertions illustrate a clear correlation between strategic learning practices and measurable success in their academic endeavors [6]. Moreover, increased self-awareness is critical for cultivating effective study habits. Many students acknowledge that *“Self-awareness leads to better studying”* and stress the significance of *“Understanding one's strengths and weaknesses.”* This self-reflection enables them to customize their learning strategies, enhancing overall performance [4]. Beyond academic achievements, students report notable skill enhancement as a direct result of their self-directed efforts. They emphasize that *“Skill enhancement through consistent practice”* and *“Improved skills resulting from focused study”* are essential aspects of their educational experience, reinforcing the notion that dedicated practice is vital to tangible skill development [3]. Collectively, these insights illuminate the transformative effects of self-directed learning, demonstrating its critical role in enhancing academic performance and fostering personal growth and development. This multifaceted impact underscores the importance of encouraging self-directed approaches in educational settings to optimize student outcomes.

#### 3.5. The main factors either support or impede student teachers on SDL

Supporting self-directed learning among student teachers hinges on several key factors. Self-discipline is paramount; students frequently acknowledge its importance with statements like *“Self-discipline is important for success”* [4]. Goal setting also plays a crucial role, as the clarity of academic objectives significantly impacts learning outcomes, as reflected in the quote, *“Set clear goals for studies”* [6]. Effective planning and scheduling are essential for managing study time and materials, demonstrated by insights like *“Schedule a daily schedule for each subject”* [5]. Additionally, access to resources enhances the learning experience; students often refer to the value of various tools, stating, *“Find video tutorials”* and *“And online research in the library”* [3]. Finally, support structures, including mentorship and peer relationships, create a conducive learning environment, with comments such as *“Seek help from peers or mentors”* underscoring this point [3]. Conversely, several factors can impede the self-directed learning process. A lack of guidance from mentors leaves students feeling lost, as noted in quotes like *“Without support from teachers, I feel lost”* [3]. Time constraints pose significant challenges, with student teachers expressing the necessity to *“Manage your time effectively”* [4]. High levels of stress and anxiety further complicate the situation, making it difficult for student teachers to maintain focus, as expressed in *“High stress makes it hard to study”* [4]. Limited access to resources can also hinder student teachers' ability to engage fully with their studies, illustrated by statements such as *“I struggle to find the materials I need”* [4]. Lastly, a lack of self-awareness regarding personal strengths and weaknesses can obstruct tailored learning

strategies, with student teachers recognizing that “*Self-awareness leads to better studying*” [4]. These factors shape student teachers' self-directed learning landscape, highlighting supportive and impeding influences.

#### 4. Discussions

The findings from this study provide essential insights into the self-directed learning (SDL) behaviors of student teachers in the BTEC program. The demographic data indicates a generally positive attitude toward SDL, with most respondents reporting that they “sometimes” or “always” engage in SDL practices.

The findings suggest that student teachers acknowledge the importance of SDL and are willing to incorporate these principles into their learning. However, a small percentage (2.1%) reported that they “never” engage in SDL, indicating areas for improvement and the potential for significant growth within the BTEC program, which should be seen as an opportunity for further development. The self-assessment of SDL reveals both strengths and weaknesses. Respondents agreed with their ability to set goals and manage their learning (Q1 and Q3), indicating strong support in these areas (Brockett & Hiemstra, 2018; Garrison, 1997). However, low scores and dissatisfaction regarding Q19 suggest significant issues that need addressing, possibly related to the reliability and validity of the assessment tool, which a Cronbach's Alpha value of 0.91 deemed to have an “excellent” level of dependability (Guglielmino, 1977; Long, 1989). Variability in responses, especially for Q12, underscores the need for qualitative research to explore the diverse perspectives of student teachers and ensure the validity of the findings (Merriam, 2001; Patton, 2014). Factors that support or impede the SDL process provide insights for program improvement. While many student teachers implement SDL to some degree, only a tiny percentage reported high levels of SDL engagement (75-100%) (M. et al., 1975; Owen, 2002; Tough, 1971).

The thematic analysis of open-ended responses identified vital factors affecting SDL, including self-discipline, goal setting, time management, and access to resources (Brockett & Hiemstra, 2018; Candy, 1991; Garrison, 1997). These findings guided the development of targeted interventions to enhance SDL capabilities among student teachers (Hiemstra, 1994; Merriam, 2001). Additionally, the study indicates potential gender-specific differences in SDL engagement, with 71.4% of respondents being female. This disparity raises questions about sociocultural influences, such as peer group, technology, education conditions, learning preferences, such as learning strategies, motivation, resources selection, diverse learning activities, and access to educational opportunities (Caffarella & Olson, 1993; Merriam & Baumgartner, 2020). Exploring these dynamics could lead to more inclusive educational approaches that cater to diverse needs (Rovai et al., 2013). Furthermore, the literature highlights the importance of motivation (McCoach & Flake, 2018; Medalia & Saperstein, 2011; Pintrich, 1999), learning styles (Abdullah et al., 2024; Hua et al., 2024), and technology-enabled learning strategies (Alreiahi, 2020; Stumbrienė et al., 2024). Understanding these factors is crucial, as motivated learners are more likely to engage in SDL activities (Chukwuedo et al., 2021). Understanding diverse learning styles can lead to personalized SDL interventions (Fleming & Mills, 1992; Kolb, 2014). Incorporating technology can enhance SDL by providing greater access to information and facilitating collaboration (Barasa et al., 2022; Choy & Cheung, 2022).

In conclusion, while student teachers show a generally positive attitude toward SDL, there is room for improvement. The findings underscore the need for targeted interventions focusing on self-discipline, goal setting, time management, and resource access. These interventions are not just beneficial but essential for the growth and development of the BTEC program (Adams & Blair, 2019; Krskova et al., 2021; Kunzl & Messner, 2023; Tushemereirwe, 2021). A deeper qualitative investigation, particularly addressing gender dynamics and the role of motivation (Badjanova et al., 2021; Stolk et al., 2021), learning styles, and technology-enabled learning would further elucidate the diverse perspectives of student teachers and inform tailored educational strategies (Koehler, 2020; Nirmala et al., 2022; Perl, 1985; Williams, 2014).

#### 5. Conclusion and Recommendation

The analysis of self-directed learning (SDL) among student teachers emphasizes the need to cultivate autonomy, intrinsic motivation, and effective time management in educational programs. While many student teachers recognize the importance of SDL, varying satisfaction levels suggest current practices often fall short. This

highlights the necessity for targeted interventions that leverage strengths and address barriers. Implementing mentorship programs can offer guidance, helping student teachers navigate their learning pathways effectively. Additionally, integrating time management training into curricula is crucial for balancing academic and professional responsibilities. Promoting self-directed learning through engaging projects and collaborative opportunities can enhance intrinsic motivation, allowing student teachers to take ownership of their education. BTEC institutions must foster environments that support self-directedness, resilience, and confidence, preparing future educators for complex roles. Main barriers include inadequate time management skills, which hinder students' ability to balance responsibilities. Workshops on planning and stress management can empower students.

Furthermore, dependent learning reduces autonomy; fostering exploratory learning environments can enhance self-confidence and problem-solving skills. Establishing robust mentorship programs and promoting self-care initiatives will also address feelings of uncertainty. By tackling these challenges, BTEC administrators can create a supportive framework for student teachers' SDL success.

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