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A RASCH ANALYSIS OF STUDENTS' MOTIVATION AND LEARNING STRATEGY IN DOMPET DHUAFA

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Abstract

This study aims at looking into the motivation and learning strategies of students of Leadership Enrichment and Acceleration Program (LEAP) Dompet Dhuafa through the administration of the Motivated Strategies for Learning Questionnaire (MSLQ), an 81-items, self-report instrument designed to measure students' motivational orientations and their use of different learning strategies. The MSLQ is divided into two broad categories which are a motivation section and a learning strategical section. The motivational orientation scale of this instrument is divided into six sub-scales namely intrinsic goal orientation, extrinsic goal orientation, task values, control of learning beliefs, self-efficacy for learning and performance, and test anxiety. The learning strategies scales are divided into nine sub-scales namely rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time/study environmental management, effort regulation, peer learning, and help seeking. The questionnaire was administered to 24 students of LEAP class and the data analysis used the Rasch Measurement Model. The finding of this study is expected to be the subject of discussion in the development of learning design for the next LEAP in Dompet Dhuafa.

Keywords: Rasch, MSLQ, Motivational Orientation, Learning Strategy, LEAP

1 INTRODUCTION

Self-regulated learning has an important influence on one's learning success. Pintrich (Sadi & Uyar, 2013) defines self-regulated learning as the strategies that students use to regulate their cognition (the use of various cognitive and metacognitive strategies) as well as the use of resource management strategies which students use to manage and control their environment and also their learning. In the same context, Pintrich and Zimmerman (Lim & Yeo, 2021) state that the self-regulated learning (SRL) is defined as an active process where the learners set their own goals, make the use of learning strategies to plan, monitor, regulate, and appraise in terms of various aspects including cognitive or metacognitive, motivational, and behavioural to attain the target goals.

Self-regulated learning is a cyclical process, where in the student plans for a task, monitors their performance, and then reflects on the outcome. The cycle then repeats as the student uses the reflection to adjust and prepare for the next task. The process is not one-size-fits-all; it should be tailored for individual students and for specific learning tasks (Zimmerman, 2002). Pintrich (2004) explains the four phases in self-regulated learning strategy. Phase 1 involves planning and goal setting as well as activation of perceptions and knowledge of the task and context and the self in relation to the task. Phase 2 concerns various monitoring processes that represent metacognitive awareness of different aspects of the self and task or context. Phase 3 involves efforts to control

and regulate different aspects of the self or task and context. Finally, Phase 4 represents various kinds of reactions and reflections on the self and the task or context.

Self-regulation is not a mental ability or an academic performance skill; rather it is the self-directive process by which learners transform their mental abilities into academic skills (Zimmerman, 2002). Learners who have good self-regulation can be proactive in the learning process because they are aware of their strengths and weaknesses. They also have clear learning goals and a variety of strategies to achieve learning goals.

Self-regulation is important because the main function of education is to develop lifelong learning skills. After graduating from school or graduating from college, they have to learn many informal life skills. For example, in the world of work, they are challenged to continue to add and improve life skills in order to survive in the world of work.

Several research results show the importance of self-regulation in learning to build personal qualities. First, self-regulation in learning involves more than detailed knowledge of a skill, it involves self-awareness, self-motivation, and behavioral skills to apply knowledge. Second, self-regulation in learning is not singular. On the other hand, self-regulation requires a different process for each person in carrying out their learning tasks. Third, the quality of self-motivation of independent learners depends on self-efficacy (Zimmerman, 2002)

Specifically, self-regulation of behavior involves the active control or the use of various resources that the students have available to them, such as time, environment, and effort, whereas self-regulation of motivation involves controlling and changing motivational beliefs, such as efficacy and goal orientation (Was et al., 2010, p. 3). Bartels & Jackson, 2009; Bouffard-Bouchard, Parent, & Larivee, 1991; Dembo, 2000; Middleton & Midgley, 1997; Paulsen & Gentry, 1995; Pintrich & Schunk, 2002; Schunk & Ertmer, 2000; Schunk, 1990, 1994, 2001; Zimmerman, 2000; Wolters, Yu, & Pintrich, 1996 (Was et al., 2010) state that the impact of self-regulation on academic achievement has been investigated in conjunction with motivational variables, such as self-efficacy, achievement goal orientation, and learning strategies.

Duncan TG & McKeachie WJ (2005) state that the motivation and learning strategies are not static traits of the learner, but rather that “motivation is dynamic and contextually bound and that learning strategies can be learned and brought under the control of the student”. Based on this framework, the Motivated Strategies for Learning Questionnaires (MSLQ) was developed using a social-cognitive view of motivation and self-regulated learning. In this model, students’

motivation is directly linked to their ability to self-regulate their learning activities, where self-regulated learning is defined as being metacognitively, motivationally, and behaviourally active in one's own learning process and in achieving one's own goals (Was et al., 2010).

In this study, we will identify the motivational profiles and learning strategies of participants in The Leadership Enrichment and Acceleration Program (LEAP). LEAP participants are employees of Dompet Dhuafa (DD) at the head office, branches, and organ. The LEAP program has the following objectives: 1). prepare a cadre of leaders at the middle management level; 2). improve the ability of employees at the supervisor level to be able to carry out their roles as leaders of program executors as well as prepare themselves to fill higher managerial positions. The LEAP program begins with a competency assessment or profiling process, in class learning, and a final project. This program runs from August 25, 2021 to March 17, 2022. The materials studied by LEAP participants include: 1) leadership quality, 2) program design, 3) business model canvasing, 4) grooming and table manners, 5) personal branding , 6) project management, 7) project monitoring and evaluation, 8) managing team, 9) customer focus mindset, 10) writing communication.

This study attempted to provide a clearer understanding of the aspects of motivation and learning strategy in the context of self-regulated learning strategy through student of LEAP responses to questionnaire items and differences response in their demographic profiles. To pursue that, a quantitative method using questionnaires for data collection was adopted wherein the Rasch Model approach and Winsteps version 3.73 software were to assess issues related to the motivational orientation and the learning strategy.

2 METHODOLOGY

This study employed a quantitative approach where a survey was conducted to understand the aspects of motivation and learning strategy. The following sub-sections describe the details of the survey.

2.1 Participants

Twenty-four employees of Dompet Dhuafa are participants in this study. Data was collected from employees who had studied in the Leadership Enrichment and Acceleration Program held from 25 August 2021 until 17 March 2022. The demographic profile of participants is shown in Table 1.

Table 1. Demographic Data of Students of LEAP

Demographic		Frequency	Percentage (%)
Gender	Male	12	50
	Female	12	50
Age	< 30 years old	14	58.3
	30 – 40 years old	10	41,7

Table 1. Demographic Data of Students of LEAP

Demographic		Frequency	Percentage (%)
Department	Fundraising	7	29.2
	Program	10	41.7
	Brand Activation	1	4.2
	Communication	2	8.3
	Operational	4	16.6
Entity	DD Head office	13	54.2
	DD Branch	9	37.5
	Organ	2	8.3
Length of Service	< 5 years	13	54.2
	5 – 10 years	10	41.2
	> 10 years	1	4,6
Job Position	Manager	4	16.7
	Supervisor	7	29.2
	Officer	13	54,1

2.2 Instrument

A questionnaire survey was conducted to get a clearer and better understanding of the respondents' level of motivational orientation and learning strategies. In this study, ordinal type data was collected from the questionnaire. This study was based on the Motivated Strategies for Learning Questionnaire (MSLQ) that has two dimensions: motivational orientation and learning strategies.

The questionnaire was adapted from Pintrich et.al (Artino, 2010). Responses to the items were based on a five-point Likert rating scale (1=strongly disagree to 5=strongly agree). Demographic profile information such as job position, length of service, workplace entity, and workplace department were used in this study to find differences in how LEAP students responded to the item.

2.3 Measurement Model and Data Analysis

The appropriate analysis for this type of data uses a Rasch Model rating scale, where the ordinal data is counted as frequencies then is locked as odd probability. After that, the probability is

converted into equal-interval-type data using a logarithm (Sumintono & Widhiarso, 2014).The logarithm function is used to produce measurements with the same equal-interval scale. Then a measurement model is calibrated by the process of conjoint-measurement to determine the relationship between the item difficulty level and person ability using the same unit-scale called a logit (logarithm odd unit) (Rusland et al., 2020).

Bond & Fox, 2015; Engelhard, 2013; Sondergeld & Johnson, 2014 (Rusland et al., 2020) state that the Rasch Model rating scale is particularly suitable for measuring latent traits in assessing human opinions, perceptions, and attitudes With the Rasch analysis, the results can explain item difficulty levels with accurate and precise measurement (item calibration), detecting item fit, identifying item bias (differential item functioning [DIF]), as well as measuring the respondent motivational and learning strategies level (Linacre, 2013). Further, respondent analysis using this measurement model provides better and more accurate results that will be more helpful in obtaining the consistency of responses to the questionnaire (person-fit statistics).

Table 2. Summary Person and Item Statistics

	Person	**Item**
N	24	81
Measures Mean *SD* *SE*	 1.15 0.61 0.13	 0.00 0.90 0.10
Outfit Mean Square Mean *SD*	 1.01 0.42	 1,01 0.43
Strata	4.72	3.87
Reliability	0.92	0.88
Cronbach's Alpha	0.94	

Based on the information presented in table 2, we can see the interaction between person and item as a whole, person measure, person reliability value, and item reliability value. The person measure value is 1.15 logit. The average value that is more than logit 0.0 indicates the tendency of respondents who are more likely to agree with the statements on various items. Cronbach's Alpha value of 0.94 means that the interaction between person and item is very good. Person reliability value of 0.92 means that the consistency of the answers from respondents is very good and the value of item reliability 0.88 means that the quality of the items in the instrument is very good (Sumintono & Widhiarso, 2014).

Fisher Jr. (2007) states that the strata index (equal to or more than three) and reliability (more than 0.67) item and person statistics suggest very good reliability. The grouping of people and items can be seen from the separation value. The greater the value of separation, the quality of the instrument in the overall respondents and items is better because it can identify groups of respondents and the items are getting better. The strata value in the person aspect is 4.72, indicating that the value of the person and item strata separated is very good (Fisher Jr., 2007).

3 FINDINGS AND DISCUSSION

3.1 Item Difficulty, Person Level of Motivation and Learning Strategies, Differences between Respondents' Demographic Factors and MSLQ

The results of the study are described in the following sub-sections.

3.1.1 Item Difficulty

Table 3 classifies the items according to their item difficulty level or logit value of item (LVI). The classification of the items into four difficulty levels was done by dividing the distribution of the item logit scores based on mean and standard deviation values. There are 11 items (14%) in the category of very difficult to agree with by respondents (LVI > 0.90 logit); in the second category, which is difficult to agree (+0.90 ≥ LVI > 0.00), there are 32 items (40%); in the next category which is easy to agree with by respondents (0.00 ≥ LVI ≥ −0.90) there are also 24 items (30%); and lastly 14 items (16%) fall into the category very easy to agree with by the respondents (LVI < −0.90 logit).

Table 3. The Motivated Strategies for Learning Questionnaire Item

Difficulty Level	**Dimension**	
	Motivational Orientation	**Learning Strategies**
Very Difficult	N3, N19	N60, N37, N52, N49, N57, N58, N40, N65, N79
Difficult	N5, N6, N7, N8, N28, N25, N15	N34, N68, N80, N43, N50, N61, N33, N36, N45, N53, N44, N47, N54, N67, N59, N77, N35, N71, N75, N62, N76, N46, N56, N66, N69
Easy	N14, N29, N9, N2, N30, N12, N16, N26, N31, N20, N24	N63, N64, N72, N78, N55, N70, N39, N48, N73, N38, N41, N51, N42
Very Easy	N17, N22, N13, N21, N27, N18, N1, N4, N10, N23, N11	N32, N74, N81

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As shown in the table 3, the motivational orientation dimension tends to be easily conducted by the student of LEAP DD, where 22 (N14, N29, N9, N2, N30, N12, N16, N26, N31, N20, N24, N17, N22, N13, N21, N27, N18, N1, N4, N10, N23, N11) out of 31 items fall into easy and very easy to agree with category. In contrast, the learning strategies dimension tends toward not being easy to agree thirty-four (N60, N37, N52, N49, N57, N58, N40, N65, N79, N34, N68, N80, N43, N50, N61, N33, N36, N45, N53, N44, N47, N54, N67, N59, N77, N35, N71, N75, N62, N76, N46, N56, N66, N69) out of 50 items fall into the difficult and very difficult to agree with categories. This indicates that LEAP DD participants agree more easily with statements about motivational orientation than learning strategies.

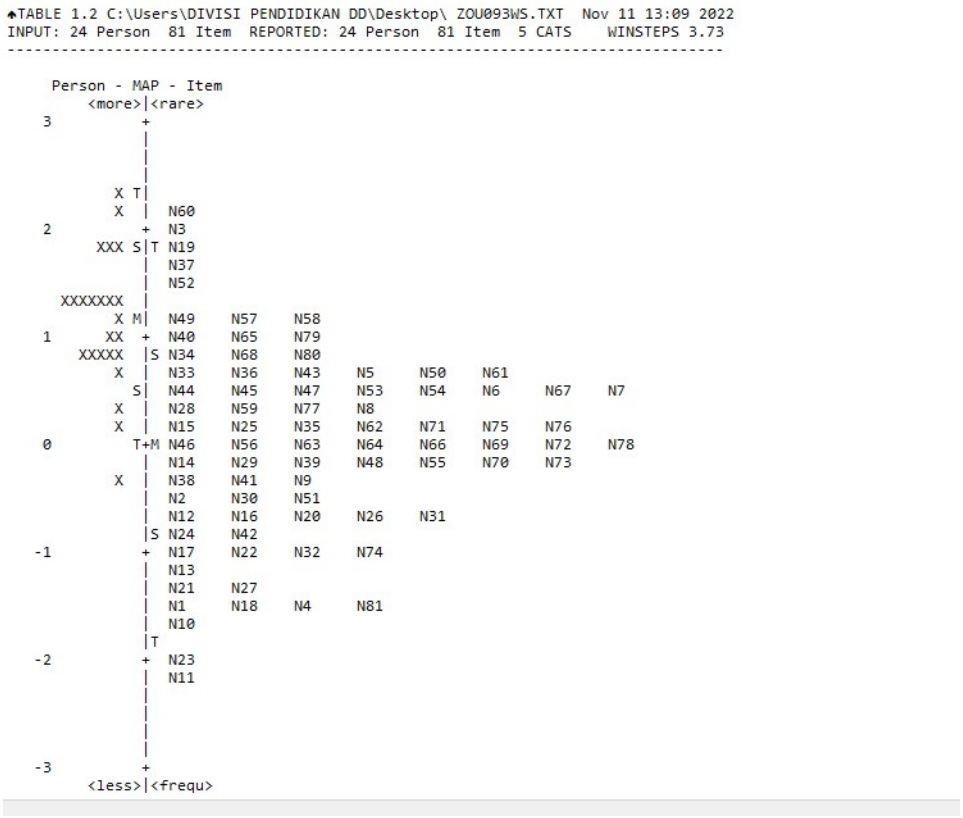

Figure 1. Item-Person Map of MSLQ

Figure 1 is an item-person map of the study resulted from Winstep software where 24 respondents answered 81 MSLQ items. The right side of the map shows each item's level of difficulty, ranging from easy to agree with by the respondents in the bottom right (logit score -- 2.14 for item N11) to the hardest one to agree with on the top right (logit score +2.60 for N60). The items work well and are capable of separating student LEAP DD participation levels for motivational orientation and learning strategies, with a unidimensional raw variance index of 36.4%.

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3.1.2 Person Level of Motivation and Learning Strategies

Based on the figure 2, the right side of the map shows everyone's difficulty level, from the one that respondents easily agree with in the top right (logit score - 2.40 for item 11PD) to the hardest to agree on in the bottom right (logit score -0.28 for 24LD).

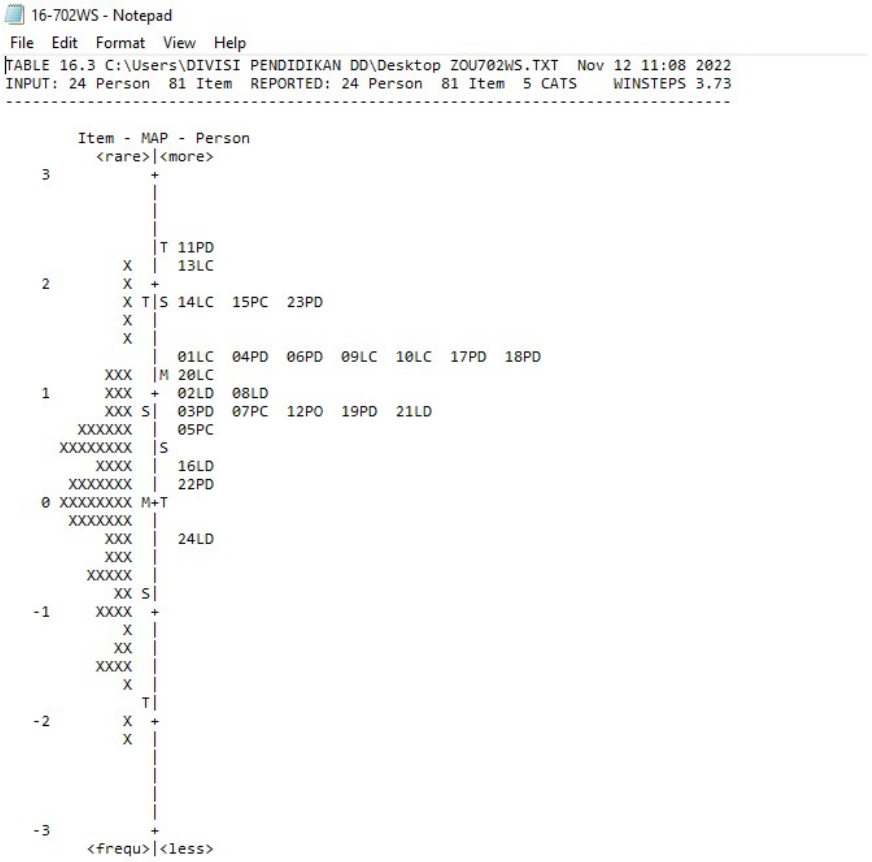

Figure 2. Item-Person Map of MSLQ

3.1.3 Differences between Respondents' Demographic Factors and MSLQ

Detection of bias on items in Rasch Analysis Model is reflected in the functionality of differential items (Differential Item Functioning). It is necessary to find out whether the items given have a bias in a certain category of respondents or not. The bias in the item can be known based on the probability value of the item being below 5% (Sumintono & Widhiarso, 2014).

Based on the students of LEAP DD responses, three items were identified as having significant differences based on gender. The graph in figure 3 shows that male student tended to more easily with item N4 (*I thought that I could use what was learned in the LEAP DD class in the work activities of the institution*), N34 (*when studying learning sessions in a LEAP DD class, I often*

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try to explain the material to other LEAP DD participants), N65 (*I have a special and fixed place to study (not changing positions) during the LEAP DD learning class via zoom meeting*). Interestingly, item N19 (*I felt uncomfortable and felt confused when facing the exam on the LEAP DD program)* was easier to agree for female student than male student of LEAP DD.

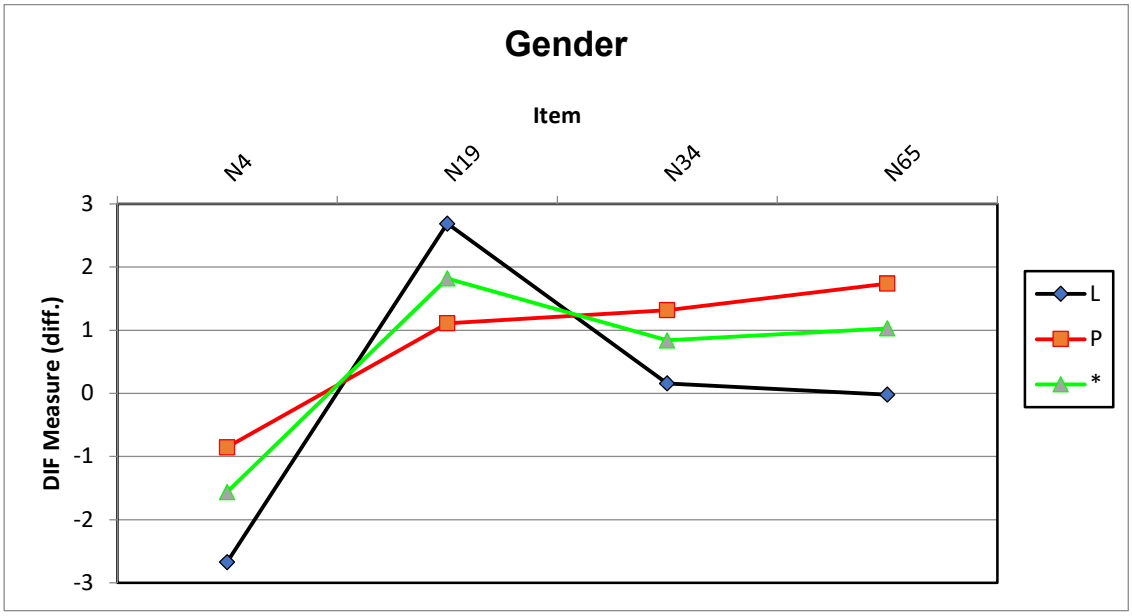

Figure 3. Person DIF Plot Based Gender

The DIF analysis based on entity of DD showed unique responses (Figure 4). The graph in figure 4 shows that student of LEAP DD from DD head office and organ tended to more easily agree with item N19 (*I felt uncomfortable and felt confused when facing the exam on the LEAP DD program)* than the student of LEAP DD from DD branch. Interestingly, item N23 (*In my opinion, the materials in the LEAP DD learning class are useful*) was easier to agree the student of LEAP DD from DD branch and organ than the student of LEAP DD from DD head office.

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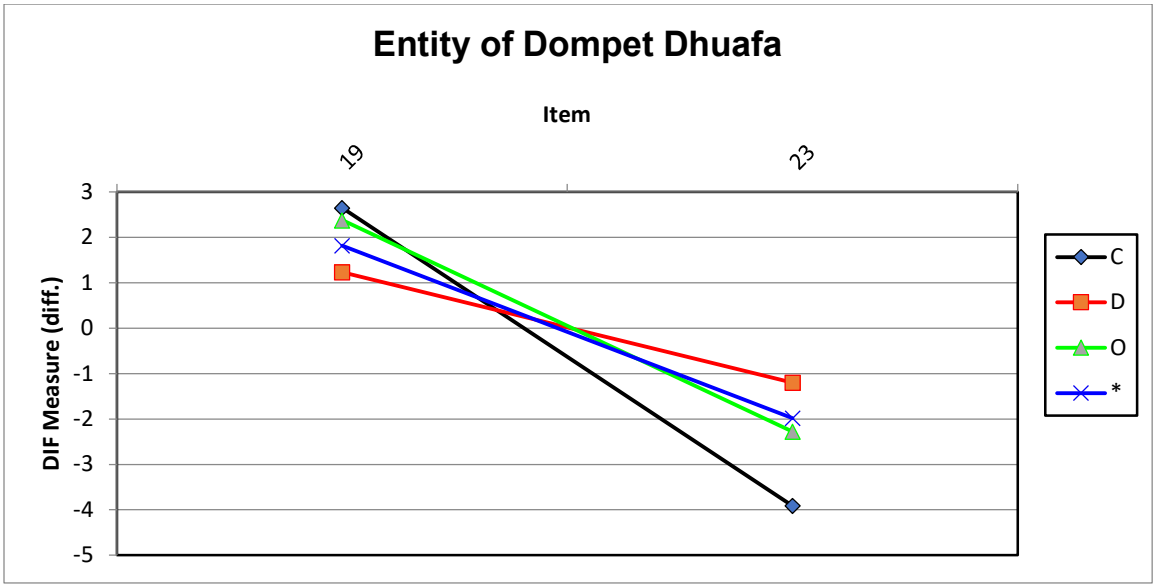

Figure 4. Person DIF Plot Based Entity of Dompet Dhuafa

Since the late 1970's, fostering life-long learning became an important educational goal in many countries worldwide (Rogiers A. et al., 2019). Helping students to develop effective ways learning how to learn is a major goal of our educational system that will only increase in importance in the future. (Weinstein & Mayer, n.d.) argues that good teaching includes teaching students how to leam, how to remember, how to think, and how to motivate themselves. Learning is viewed as an active process that occurs within the learner and which can be influenced by the learner. Consequently, control of the learning process in the learner-centered classrooms shifted from the teachers to the learners. Thus, in such classrooms, the role of teachers shifts from classroom lecturer who presents information to students to "facilitators" of the learning process, learners solely taking up the responsibility to understand their learning environment and control over "how" and "when" they should learn a given academic task.

Based on the analysis of Rasch Model, it can be identified that the perceptions of motivation and learning strategies of LEAP DD students vary. In the cognitive and metacognitive components of the self-regulation theory, Zimmerman (Kwarikunda et al., 2022) stresses that for improved learning, learners must use a variety of individual tactics and skills. Dompet Dhuafa needs to design learning that can facilitate the learning process for the gender differences in using cognitive learning strategy.

Several studies have indicated reasonable gender differences. Prior research has suggested that there are stable gender differences in learning strategy use (Meece JL & Jones MG, 1996; Wolters

CA & Pintrich PR, 1998). In the same context of the study, the girls show higher levels of cognitive strategy use (Wolters CA & Pintrich PR, 1998). The Organisation for Economic Cooperation and Development (2010) has the results of a study that the girls are more knowledgeable than boys about the various effective strategies. In his research, Rogiers A. et al., (2019) found that girls tend to utilize more learning strategies than boys. On the contrary, in other studies (Niemivirta M, 1997) boys were found to use more memorization strategies than girls. Specifically, Niemivirta M. (1997) concluded that boys are rote learners since they outperformed girls when using rote learning strategies.

The learning design in the next LEAP DD class should focus on training students' self-regulation skills. Because, self-regulated students are autonomously motivated, study out of curiosity for inherent enjoyment, satisfaction, and personal interest with a sense of psychological freedom and perceived internal locus of causality (Manganelli S et al., 2019). No strategy is dominant or works equally for all individual learners for a given task. This implies that while some cognitive and metacognitive learning strategies are useful for some students, the same or similar learning strategies may not be equally useful to other students (Dowson M & McInerney DM, 1998).

4 CONCLUSION

This study investigated student of LEAP DD responses to questionnaire item and differences between their demographic profiles through analyses the Motivated Strategies and Learning Questionnaire. The study found that the motivational orientation dimension (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, test anxiety) tends to be easily conducted by the student of LEAP DD, where 22 out of 31 items fall into easy and very easy to agree with category. In contrast, the learning strategies dimension tends toward not being easy to agree, 34 out of 50 items fall into the difficult and very difficult to agree with learning strategies dimension (rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time/study environmental management, effort regulation, peer learning, help seeking).

The study also found that item N60 (when there's a difficult task, I give up or I just work on the easy part) is the most difficult statement for respondents to agree with. Instead, item N11 (*the most important thing for me right now is to improve my still standard abilities so that I can improve my abilities after following LEAP DD*) is the easiest item for LEAP DD participants to approve.

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