Transforming Pedagogy: Studying the Relationship between Students' Self-Regulated Learning and AcademicAchievement at Higher Education

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A R T I C L E   I N F O

A B S T R A C T

Recently an increasing focus has been observed on the learner-centred approaches for their role in preparing more independent and skilful graduates. Of these active learning styles, self-regulated learning has received greater attention in higher education. In this context, it is highly important to examine current state of self-regulated learning adopted by students, along with examining the gender differences and the nature of discipline in adopting self-regulated learning. Considering this situation, theprime objective of the study was to map the link between students' self-regulated learning and their academic achievement in their related disciplines, and on basis of their gender. Using the descriptive design, a quantitative survey was used to collect the data from 300 students of two public sector universities of Pakistan. A questionnaire was adopted to collect data fromstudentsto measure their level of adopted self-regulated learning and CGPA. Simple linear regression and t-test and ANOVA wereapplied to reach to certain results.Our findings rejected the main hypothesis that there is no impact of self-regulated learning on students' academic achievement. Likewise, this studycould not identify the difference in view of adopting self-regulated learning strategies by male and female students at higher education. However, in view of measuring SRL at faculty level, students from the faculty of science adopted self-regulated learning strategies to some extent. Next to concrete discussion in relation to these findings limitations and directions for future researches were stressed.

Introduction

Higher education across the world is facing pressures to assure quality and efficacy of educational delivery (Bridgstock, 2017). The emphasis is on improving the quality of education and with a specific focus on imparting knowledge and 21st century skills in learners. Producing high quality graduates for the professional world has becomeone of the main task of contemporary universities. This receives asubstantial attention by the policy makers and scholars across the globe (Anagün, 2018).Learner-centredapproachesare dominating in the current era to prepare more independent and skilful graduates. It leads learners from passive learning to active learning yetthe acceptance and shift to these approaches in developing countries are quite crucial (Bembenutty et al. 2013; Vohs&Baumeister 2011).Nevertheless, the higher education institutes in the developing countries are making efforts to promote such learning styles to produce quality graduates and to align their academic standards with international higher education (Altena, 2017; Kumar, 2016; Schweisfurth, 2011). Among other learning styles, self-regulated learning (SRL) received greater attention from scholars around the world. It has been shown that learners who adopt self-regulated learning

strategies can learn better and consequentlyare more knowledgeable and skilful in their academic endeavours (Bannert&Reimann, 2012; Broadbent & Poon, 2015).

SRL facilitate learners to work independently and enhance their metacognitive skills, application of such learning strategies also improve academic outcomes (Jarvela&Jarvenoja, 2011; Zimmerman, 2008). SRL is actually comprise on students' own thinking and ideas towards particular topic and actionswhich are analyticallyplanned to gain knowledge and skills (Zimmerman, 2000).

There is a strong support from the literature in opting self-regulated learning approaches and its impact on students' related outcomes e.g., motivation, efficacy, behaviour and academic achievement etc. However, the adoption and application of self-regulated learning strategies by learners is not possible without proper guidance and training. In fact, teachers' role is of great importance in setting the environment of self-regulated learning in classroom. Well-trained and visionary teachers can set the independent learning environment for their classrooms. But, there are certain underlying concerns which need to take into account for the successful implementation of self-regulated learning. For example,Winne and Hadwin (2013)highlighted the following key issues, what stimulates learners for independent learning? What sort of procedures engagelearners in achieving academic goals? As mentioned earlier the most important, how classroom environment affects learners' self-regulated learning?(Schunk&DiBenedetto, 2020). Implementing SRL is not simply easing teachers' burden but to prepare autonomous learners to dig out the problem under study. The aim and objectives of SRL should be carefully designed and conveyed to the learners to intact their attention with the goals.

This all seems very fascinating and productive but contextual factors and organizational vision play a vital role in implementing such innovative teaching and learning styles (Junejo, Memon, & Mohammad, 2018).In Pakistani context, rote learning is still dominating in higher education. The flatness of results would let someone shocked that all the high achievers are on the same position withminor differences and similar is the case with low achievers but what about the mediocre? Where do they stand? The answer of this question is not difficult to understand. The problem lies with our teaching system, our lesson planning, teaching methods, and our ways of assessment. We force students to learn like this, we never focus on developing their understanding, hours long lectures, readymade handouts and traditional ways of assessment confined our students in rote learning. The race of scoring high marks is damaging the quality of education(Yasmin, Naseem&Masso, 2019).

Quality always lies with the performance but performance for the sake of getting marks cannot sustain longer. Pakistani higher education struggling hard but ensuring quality in classroom is teachers' prime responsibility. Unfortunately, our university teachers are not prepared for setting up student-centered classrooms. In this context, it is highly imperative to examine current state of self-regulated learning adopted by students. Likewise, it may also be useful to examine the gender differences and the nature of discipline in adopting self-regulated learning by university students. Considering this situation, we planned this study to comprehend the current state of students in view of implementing self-regulated learning and its relationship with their academic achievement in higher education. This study will further focus on examining the gender differences and how students learn in their respective disciplines, which strategies they used to understand, and apply the learned concepts andto what extent they are preparedto adopt SRL techniques in their learning.

Objectives of the Study

Following objectives were designed to carry out this research:
- To study the current state of students as to adopting self-regulated learning strategies in higher education.
- To examine the difference between female and male students as to adopting self-regulated learning strategiesin higher education
- To examine the difference among the students from various faculties as to adopting self-regulated learning strategies in higher education.

Research Hypotheses

The following hypotheses were put forwarded to achieve the study objectives:

HI: There is a relationship between students' self-regulated learning and academic achievement.
HI: There is a difference between male and female students as to adopting self-regulated learning at higher education?
HI: There is a difference among students of various facultiesas to adopting self-regulated learning strategies at higher education?

Theoretical Framework

The following Zimmerman's model of self-regulation (2008) was followed to developtheoretical framework for this study.

Self-Regulated Learning

Initially, self-regulated learning was conceptualized as a component of self-efficacy theory of Bandura (1977), later, it became the part of social learning theory.Self-regulation underlies a variety of componentsas self-control in diverse situations and environments. Individuals who adopt SRL could handle the varied situations with the help of self-control and by applying SRL strategies they can handle with challenging situations (Bandura 1977, 2018). Zimmerman (2000) also successfully testedself-regulated learning in academic context. Zimmerman (2000) further consideredthat SRL is the foundation of higher education, it invokes creativity in learners to think out of the box and develop multiple solutions to solve a problem. Self-regulated learners engage themselves in actions, thoughts, and behaviours in order to achievetheirgoals.Learners achieve their goals by monitoring and evaluating their performance by applying wide ranging strategies. The engagement in the processes of SRL e.g., goal setting, monitoring, self-evaluation and reflection help learners to achieve their personal and educational outcomes (Nuland, Dusseldorp, Martens, &Boekaerts, 2010).

Increasing amount of literature onself-regulated learning acquired vigorous attention from all the fields of education and proved practicale.g., sports, medical, music fields, mathematics, sciences, and technological disciplines (Bembenutty et al. 2013; Clark &Zimmerman, 2014).

Models of Self-Regulated Learning

Various models of self-regulated learning are available neverthelessthese models shared common characteristics of Zimmerman's model (Zimmerman and Schunk 2011). As mentioned elsewhere Zimmerman model was based on socio-cognitive theory,Boekaerts' (1995) modelwas focusing on goals and emotions. Winne and Hadwin (1998) developed their self-regulated learning model centring on information processing theory.Though, the foundations of these models are different but certainly all these models highlighting the cognitive, metacognitive and motivational factors through which learners understand and then pursue their learninggoals(Greene &Azevedo 2007).

Cognitive process is based on attention in which learners monitor their performance and tasks by clearing the distracting thoughts and divert his attention to achieve goals in a conducive learning environment (Winne, 1995). The role of teacher is important in creating a conducing learning environment and to intact the learners' attention to the set goal. Metacognition in SRL means to know your strengths and abilities in view of your tasks and to achieve your set goals (Zimmerman, 2008). In motivational factors, individual who are cognitively active in their learning processes, they increase their efforts, seek help from their peers and solve challenging tasks (Panadero, 2017).

Triadic Modelof Self-Regulated Learning

The above three components are the roots of Zimmerman'striadic model of SRL. The triadic model is based on the following steps: forethought, performance, and self-reflection (Zimmerman, 1986).
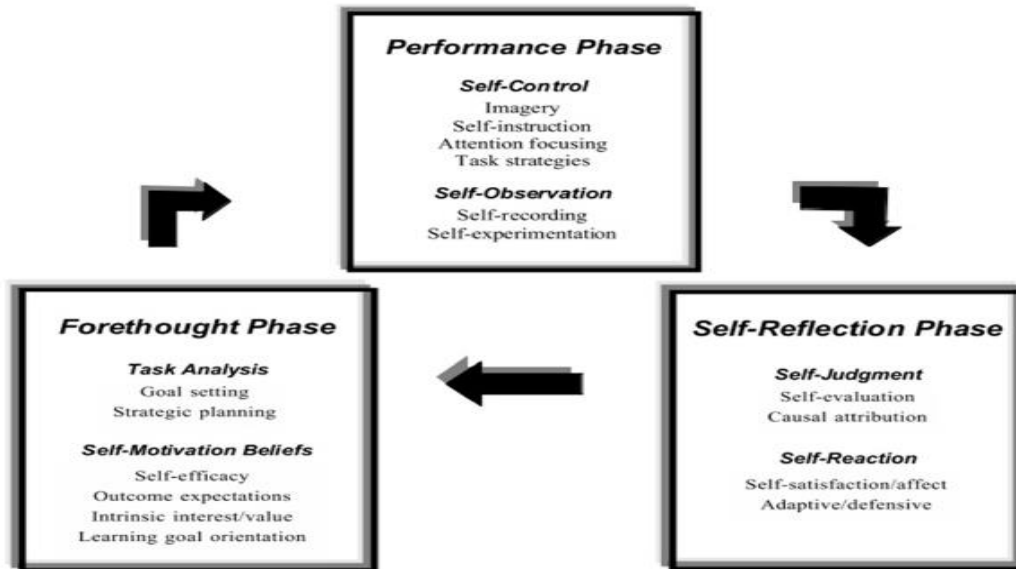
Figure 1. *Triadic model of self-regulated learning adopted from (Zimmerman, 1986).*

The first phase of this triadic model is performance phase, this phase comprises on two kinds of processes, self-control and self-observation. In the process of self-control, learners concentrate on the task at hand and enhance their efforts to complete the tasks, creating image of the task helps the learners to plan various strategies to solve the task and by using varied learning resources. Self-observation process refers to mapping learners' performance by using different strategies, such as self-recording and self-experimentation (Zimmerman, 2008).The second phase of this model is self-reflection andit contains two types, i.e.,self-judgement, self-reaction. Self-judgement or evaluation refers to the evaluations of own performance and making attributions about their success or failure. Self-reaction consists on self-satisfaction andanalyzing what to change to achieve required results in future. Learners critically identified their performance and identify flaws and errors to be careful in future in view of better performance (Zimmerman, 2000; 2008).The last phase of this model is forethought, this phase refers to plan actions. This phase further has two kinds, task analysis and self-motivation beliefs. Task analysis part is focusing on goal setting in view of the task at hand and strategic planning to solve the task and this leads to self-motivation beliefs. Intrinsic motivation helps learners to be determined to complete their task.

Academic Achievement

Literature is dominating with the fact that self-regulated learning has generally positive impacton students' academic achievement (e.g.,Barber, Bagsby, Grawitch&Buerck, 2011; Panadero 2017;Sitzmann& Ely, 2011).However, it is pertinent to mention that explicit training could increase and strengthen its impact on students learning. The more you invest in preparing autonomous learners the more it will enhance their academic achievement. Generally, it is linked to institutional policy or depend on teachers to enhance students' such skills (Dignath&Büttner, 2008; Boulware-Gooden, Carrekare, Thornhill & Joshi, 2007).

Teachers beliefs, experience, observation and reflection could play an important role in implementing such skills (Buehl& Fives, 2009). The association between instructor and learnersinrelationto guidance, help seeking, and potential support could motivate students towards successfully implementing SRLstrategies and help them to score higher in their academics. In his empirical research,Pintrich (2000) found a strong positive relationship between students' motivation towards self-regulated learning and academic achievement. The self-control and self-attribution aspects influence students' beliefs in relation to improving their performance.

Next to these aspects, self-reflection, self-observation and judgments about their own work also enhances students' academic achievement and their success in achieving goals andenriching their motivation (Brookhart, 2011). In their meta-analyses Hattie and Timperley (2007) identified effects of feedback in academic achievement and concluded that feedback enhancesdevelopment of self-regulated learning. Similarly, Andrade and Valtcheva (2009) highlighted in their research that involving learners in self-

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evaluation as a part of their self-regulated learning is to boost their academic achievement. It consists of evaluation of their own progress towards a task specific goals which resultantly increase both self-regulation and academic achievement.

Methodology
Research Procedure

The main objective of thestudy is to measure the relationship between students' self-regulated learning and their academic achievement in their related disciplines, and on basis of their gender. Using descriptive design, a quantitative survey was conducted to collect data from students of two public universities in Pakistan. Furthermore, a questionnaire was adopted to collect the data in relation to study students' self-regulated learning. As to measure students' academic achievement,their CGPAs was employed. After calculating descriptive statistics, simple linear regression and t-test were calculated to reach to certain results.

Sample

Data were collected through convenient sampling technique from two public sector universities of Punjab, Pakistan. Out of these two universities, one is a general university and other one is a general women university. This would also help to get in depth insight of existing learning trends of students in both co-education setup and in a women university. After selecting the universities on convenient basis, a stratified sampling technique was applied and divided the sample in three strata on the basis of faculties in the universities. We primarily involve three faculties from each university i.e., (1) Faculty of Arts and Social Sciences, (2) Faculty of Sciences, and (3), Faculty of Languages. From each faculty all departments were included in the sample and their students were chosen on convenient basis. All the students of BS final semesters were involving in this study since they have got a wide range of experience with multiple teachers and have observed and practiced variety of learning strategies. In total, 300 students participated in this research.

Measures

A thorough literature was reviewed to find a best fit research instrument. In fact, there are not many research instruments available to measure self-regulated learning. Some of these research instruments are paid and we could not afford to buy those instruments. We depend on Academic Self-Regulation Scale (A-SRL) developed by Magno (2010). We found this instrument suitable for our research respondents and context. This questionnaire comprises 55 statements,rated on the 4-point Likert scale, ranging from strongly agree to strongly disagree. The calculated reliability of this scale is Cronbach's α: .83.As to measuring students' academic achievement, their CGPA were asked in the questionnaire to measure their current performance and self-regulated learning.

Data Collection

An informed consent was obtained from students and management of both universities to collect data from their students. Researcher distributed questionnaire individually to all students. Next to demographic variables, all key instructions were mentioned to fill upthe questionnaire. Participants were asked to rated their opinion on given 5-point Likert scale. All the final semester students were invited to take part in this survey. Their age was ranging between 21-24 years. All the ethical guidelines were ensured in view of anonymity of the respondents and their data.

Data Analysis

All the collected data were entered into SPSS for analysis. All the data were cleaned and prepared for analysis. Descriptive statistics of the variables were calculated before applying the simple linear regression. One Way ANOVA was applied to measure the level of adopted self-regulated learning of students of various faculties. SPSS version 23 was used to analyse the data.

Results

The main aim of this research is to map the relationship between students' self-regulated learning and

academic achievement. The collected data were analyzed through SPSS. Before analysis all the data were cleaned and organized in SPSS. The reliability of the SRL scale was also calculated and observed as 0.83. After calculating the descriptive statistics, linear regression, independent sample t-test, and One-Way-ANOVA was applied to test the hypotheses.

Descriptive Statistics

Descriptive statistics were calculated as basics for main analysis. Table 1, presents the descriptive statistics:

Table 1. *Descriptive statistics of all variables*

Variables	Mean	Std. Deviation
SRL	3.15	.26
CGPA	3.37	.37

N=300

Table 1 shows that the university students perceive that they adopt self-regulated learning strategies to an average level, but with good level of agreement. The CGPA of students reflects bit more than average academic achievement of students.

Regression Analysis

To test the first hypothesis, the linear regression was applied. SRL was taken as predictor variable whereas academic achievement as a dependent variable. Table 2 present the results of the linear regression.

Table 2. *Summary of regression analysis*

Df		F	sig.
Regression	1	1.723	.190[b]
Residual	298		
Total	299		

*$p < 0.05$

Table 2 presents the results of simple linear regression predicting students' self-regulated learning on students' academic achievement. Following regression equation was found F (41.457) = 1.723, aR2 =06%, p < .19. The above results of linear regression present a very little amount of variance explained by the self-regulated learning and academic achievement resultantly reject our hypothesis. Table 3 presents the regression coefficient of both variables.

Table 3. *Regression coefficient*

Model	B	Std. Error	Beta	T	Sig.
(Constant)	3.705	.254		14.611	.000
SRL	-.105	.080	-.076	-1.313	.190

*$p < 0.05$

Table 3showed the regression coefficients forself-regulated learning as predictor variable. In line with above mentioned regression summary, regression coefficients also show insignificant impact of SRL on students' achievement.

Independent Samples T-Test

To test our second hypothesis, we applied independent sample t-test. Following are the results of independent sample t-test. The test was applied to compare adoption of SRL by male and female students, Male, (Mean=3.17, SD=.27) and female, (Mean=3.12, SD=.26). It was found that there was no significant difference between male and female students as to opting SRL in their studies, t (298) = -1.466, p=.95.

Figure1. following graph compares the mean scores ofboth gender learners in view of applying SRL strategies. These values also confirm the above results.
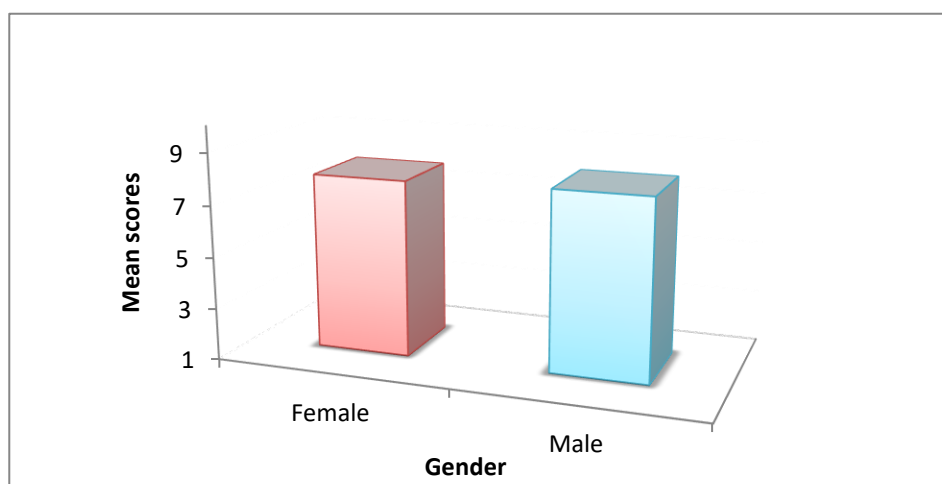

Figure 1.*Graphical representations of independent sample t-test*

One-Way-Anova

One-Way-ANOVA was applied to test our third hypothesis. Following are the descriptive analysis of all the faculties including in this analysis. The mean score for the Faculty of Social Science was($N = 161$),*Mean* = 7.70 (*SD* = .78), the mean for Faculty of Sciences was ($N = 69$), *Mean* = 8.14 (*SD* = .43), and for the Arts andHumanities was ($N = 70$), *Mean* = 8.03 (*SD* = .43). These means score showed thaton average thestudents of Faculty of Sciences adopted self-regulated learning strategies higher than students of other faculties. As to compare the adoption of SRL of students of various faculties, result of One-Way-ANOVA identified significant difference F(13.72), p < .00.

Discussion and Conclusion

The prime objective of this research was to map the relationship between students' self-regulated learning and their academic achievement in higher education. Although, self-regulated learning is a widely accepted learning strategy across the world and one of the dominating strategy in 21st learning strategies but as mentioned elsewhere this is not the case in Pakistani context. Our findings rejected the main hypothesis that there is no relationship between students' self-regulated learning and academic achievement. In contrast to our findings, the studies conducted by Khan, Shah,andSahibzada (2020) and Alvi, Iqbal, Masood and Batool (2016) measured the relationship of the SRL of students with their academic achievement in university settings and found the SRL as significant contributor to academic achievement.

Similarly, the study results of Batool, NoureenandAyuob(2019) also proved a positive relationship of SRL with learner empowerment in higher education.There could be certain reasons of our strange results, first, the above mentioned studies do not use the same scale as we have adopted in our study. Thus, reliability and validity of the scale could affect the study findings. Next, in Pakistani context respondents do not show interest in filling up the questionnaires, they do not consider the worth of research and efforts being put forwarded to conduct the research. In quantitative studies respondents usually assumes their role from future perspective and focused on 'should be' approach in contrast to report their current state of affairs. Above all, it might be possible that our study findings are true in a sense that the students from the selected universities do not use self-regulated learning, they might not aware of these certain SRL strategies

mentioned in the questionnaire.

As to our further hypotheses, again, we could not identify the difference in view of adopting self-regulated learning strategies by male and female students at higher education. However, in view of measuring SRL at faculty level, students from the faculty of science adopted self-regulated learning strategies at higher education. The available studies conducted in medical domain also corroborate with our study findings. Kassab, Al-Shafei, Salem, and Otoom (2015) conducted their research to measure the relationship of blended learning, self-regulated learning and of academic achievement of medical students. They have also found positive results in view of applying SRL strategies. Moreover, study findings of Cheema, Nadeem and Aleem (2019) also found a positive effect of SRL on students' motivation, cognition and academic achievement which is in line with our findings.

These results lead to new directionsof research inteaching/ learning in university setting. As mentioned elsewhere, higher education is increasing changing across the globe and focus on 21st learning skills which build lifelong learning skills in students. Time is ripe to train our teachers and students to adopt such skills and prepare such classroom where we can produce independent and productive learners who can enhance their entrepreneurship skills through SRL and,therefore, can contribute in knowledge based economy.

Limitations

Although, this study introduced new vistas for research and development in field of self-regulated learning in higher education, our study has some notable limitations. Frist, the selected sample was limited to map variability in results and consequently, it reduces the generalizability of the results. Adding teachers could also enrich our study results, they can highlight the factors which are likely to influence students' self-regulated learning. Adding another methodology could also widen the scope of analysis moving from quantitative analysis to qualitative analysis. Adding more variables in relation to academic achievement could also enrich the study design and findings.

As to the research instrument, we have adopted the academic self-regulated learning scale, the applicability of this scale in our context might not gear the required results. Next to this scale, focus group interviews with students and teachers could provide us in-depth insight on adopting self-regulated learning strategies.

Acknowledgement

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