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Impact of Self-Regulated Learning Behavior on the Academic Achievement of University Students

Yar Muhammad Khan, Manzoor Hussain Shah
and
Habib Elahi Sahibzada
Hazara University Mansehra

This study explored the impact of self-regulated learning behavior of university students on their academic achievement in Khyber Pakhtunkhwa. The main objective was to examine the impact of Self-Regulated Learning on the academic achievement of students. The study was quantitative in nature and a survey research method was used. The population consisted of all the students (4400) of final semester of Bachelor of Studies programs in the universities of Khyber Pakhtunkhwa from which a sample of 480 (240 male, 240 female) students was taken using a multistage stratified random sampling technique. Data was collected via indigenously developed questionnaire that was validated by a panel of experts and also pilot tested on small scale. The reliability of the questionnaire was 0.943 determined through Cronbach alpha. The collected data was analyzed using ANOVA and post-hoc. This study concludes that SRL significantly contributed to the academic achievement of the students. It was recommended that students be provided special orientation in SRL .

***Keywords**:* behavior, learning, self-regulated learning, gender difference

Self-regulated learning is a determining factor for better academic achievement. Due to its importance, self-regulated learning has remained the focus of investigation especially among psychologists and educationists. Wolters, Pintrich and Karabenick, (2003) are of the view that a direct relationship exists between self-regulatory activities and better academic performance. Zimmerman and Schunk (2011) state that students who are able to regulate themselves can perform

Correspondence concerning this article should be addressed to Mr. Yar Muhammad Khan, Ph.D scholar department of Education, Hazara University Mansehra, yarmuhammadkhan67@gmail.com
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1. Khan, Ph.D scholar, contributed in: topic selection, introduction, objectives, and analysis portion
2. Shah, contributed in: methodology and discussion section,
3. Sahibzada: overall lay out including: language, thought, linkage, literature review and references

better by incorporating their specific thinking potentials and motivation coupled with better management of the available resources and the environment in which they find themselves. Students who engage in SRL can adopt a particular cognitive strategy for resolving issues. Rubio, Thoms, Katz, Bourns (2012) say, that such learners know how to establish and elaborate their respective knowledge from the given learning material. A common idea about SRL is that learners participate in classroom activities with improved intelligence and motivation. Such students according to Barkley (2001) demonstrate their readiness to seek help when it is needed.

Students who accept responsibility for their learning have better chances of increasing their scores and enriching their knowledge and experiences. Sitzmann (2011) claims that academic achievements and self-confidence of such students are raised, and learning goals are met. According to Zimmerman (2008) this self-regulation skill plays an important role in the success of students. On the contrary, Magun and Rudnev (2010) indicated that the majority of students who reach higher studies are not well prepared to face the academic challenges in the university system. For these reasons, according to Corsi (2010), teachers should consider how to support students to develop SRL as a part of classroom teaching. This stresses the need to shift from teaching to learning and self-reflective practices.

SRL is very helpful for the success of university and college students (Koivuniemi, Panadero, Malmberg & Järvelä, 2017) and declining standards of education in Pakistan call for remedial measures (Ghazi, Ali, Khan, Hussain & Fatima, 2010). For elevating the quality of higher education in Pakistan, the inculcation of SRL is very important. University education is not merely confined to learning some subjects, concepts or contents. It is the stage where students get prepared for the professional responsibilities and future careers. They are engaged in setting goals and striving to achieve these goals. To meet the challenges of this whole process, students need to possess some specific competencies (Alegre, 2014). Such personal developments are underpinned by the model of self-regulation learning (Jackson, 2003). For professional development planning i.e. career choices and being prepared for future jobs, university students need a series of actions that include thinking about future possibilities and choices, and creatively plan to achieve the best; doing/acting on plans with greater expertise; observing using mindful reflection; recording the results and effects in the form of meaningful data; reviewing i.e. making an understanding of outcomes; and evaluating to make the judgment of required actions for improved results through self-reflection. All these processes are aligned with the series of action that self-regulated adult learners take in their learning process at universities and colleges. They do task analysis (i.e. goal setting and goal planning); they take action with self-motivational beliefs (self-efficacy), and performance skills (self-control, time management, task strategies etc.); they conduct self-observation (cognitive monitoring), self-reflection (self-judgment and self-evaluation), and self-reaction (adopt ways for self-satisfaction) for the achievement of their learning goals (Jackson, 2010). The students having more self-regulated behavior are more likely to succeed in achieving their professional and career goals in university/college life. Therefore, it is determined that research on SRL can play a guiding role in planning to support students at higher education in in their professional development and preparation for future careers. However, there is limited research on SRL among Pakistani students and its impact on their learning process. Therefore, SRL qualifies as an important research area for researchers in Pakistan.

As indicated self-regulated behaviors of the students are expected to play a very important role in the academic success and academic achievement of the university students (Kohler, 2009;

Pajares, 2001). Self-regulated learning behaviors are very crucial for students at higher education level as they have to face student-directed environment as compared to their experience of teacher-directed environment in high schools. Teachers rarely care for their learning progress at university or college level and therefore, they themselves are expected to manage and monitor their learning (Bembenutty, 20ll). Psychologists have found learners' intelligence as a function of their knowledge schema and the strategies they use to control their thinking and learning. The students who possess these abilities are called 'smart' students (Dembo & Seli, 2016), and these are the students with self-regulated behaviors. They achieve their goals by organizing their thoughts, feelings and behaviors more skillfully (Schunk & Usher, 2013). At first stage they set their learning goals, and work on these goals with firm belief (high self-efficacy) and high motivation. They apply efficient study skills (pre-viewing, note-taking, memorizing, using concept maps etc.) in the classroom for accelerating their learning process (Zimmerman, 2000; Zimmerman & Cleary, 2009). Students with high sense of self-regulation analyze their learning tasks, set learning goals and plan strategies before starting their course of study. Students' interest and value for learning result in motivation to gain and increase skills and competence in order to have competitive success in their ultimate learning goals (Harding et al., 2018). Furthermore, self-regulated learners also apply metacognition for monitoring their learning process. They deliberately use mental tracking of their learning process; they continuously evaluate and control their thoughts and actions, conditions of their working environment, and performance and reactions (Zimmerman & Cleary, 2009; Zimmerman & Moylan, 2009; Harding et al., 2018). This self-reflection of the learners helps to eliminate difficulties and distractors, and ensures academic success. Another common behavior of self-regulated learners is time management. They manage their time wisely and realistically; e.g. they divide deadlines into smaller units of times, use 80 percent success rule, establish a set time for routine, modify the environment to avoid distractors, periodically celebrate achievements to stay motivated. These time management strategies help them avoid procrastination and complete assignments and projects timely (Lewis, Jr. & Oyserrnan, 2015). This combination of SRL strategies leads to enhanced learning and increased academic scores of the students with self-regulated behavior. There are some studies that show the impact of SRL on students' performance at different education levels. There are fewer studies to have an overview about the status of SRL among university students that affects their academic achievement. Keeping in view the growing popularity of the concept of SRL, the current study was carried out to explore the impact of SR on the academic achievement of students at the university level in Pakistan. The hypothesis of the study was that there is no significant impact of SRL on the academic achievement of students.

Review of the Related Literature

Self-Regulation: According to Angus, McDonald, Ormond, Rybarcyk, Taylor, and Winterton (2009) the concept of self-regulation is associated with an individuals' potential to deals with stress, and then recovers from the energy exerted. In situations where a child is kept under excessive stress at an early age, it is likely that a kindled alarm system could develop which further leads to a situation in which even relatively minor instances of stress may promote a fight-or-flight or freeze response. In this sense, self-regulation responses reveal that it may have roots among one or many of the fundamental causes of stress across five intermingled domains: biological, emotional, cognitive, social and pro-social as suggested by Gibbs, (2006).

The SRL behavior (SRLB) and Academic Achievement: Interest has been increased in recent years to assess the effects of self-regulation on students' academic achievement. Some empirical studies conducted by Rakes and Dunn (2010), Beishuizen and Stuffiens (2011), and Fadlelmula,

Cakiroglu, & Sungur, (2015) show that the self-regulated learning behavior has a significant impact on the academic achievement of the students. Although the above mentioned researchers conducted their studies in different environments, different geographical areas, on different subjects and at different educational levels, they also applied different statistical tools but their results were the same (i.e. SRLB positively affects academic achievement). An argument emerged from their research that the learners' learning environment and capabilities are not fixed entities, but rather dynamic in nature (Schunk, 2005). Consequently, a shift in research thinking occurred. It is not only the learners' capabilities, abilities, and skills responsible for their academic achievement but factors like self-regulation have also a role to play. According to Hong, Peng, & Rowell (2009), self-regulated learning behavior can be developed in students through different learning resources and intercessions, which ultimately can have an impact on their achievements. Results of the study conducted by Hong et al. (2009) show that SRL behavior is an important predictor for the students of universities and they can be motivated by giving then information or awareness regarding self-regulated learning behavior. In addition to this Al-jarrah (2010) conducted a study on assessing the predictability of SRL behavior components about a low and high level of self-regulated learning. The self-regulated learning components assessed by him comprised of goal setting, planning, rehearsing and memorizing. A large difference in achievement was calculated between the high and low level of self-regulated learning students.

Research on high and low achievers at the university level in Pakistan: A review on related studies in Pakistan reflects a small number of studies covering diverse aspects of self-regulated learning which have been conducted in current decade. Some studies explore the self-regulate learning at school level (e, g. Kathawala & Bhamani, 2015; Abu Bakar & Ali, 2017; Habiba, Akhter, & Batool, 2019; Habiba, Batool, & Ayesha, 2020) and some studies are specific to learning in medical field (e. g. Khan, Saeed, Yasmin, Butt, & Khan, 2018; Ali & Yasmeen, 2019; Siddiqui & Khan, 2020) at college level. There are some studies having diverse focus on self-regulated learning at higher education level in Pakistan (e. g. Sarwar, Yousuf, Hussain, & Noreen, 2009; Ahmad, Hussain, & Azeem, 2012; Akhtar & Mahmood, 2013; Alvi & Gillies, 2015; Alvi, Iqbal, Masood, & Batool, 2016; Ambreen, Haqdad, & Saleem, 2016; Aziz, Qureshi, & Khanam, 2017; Ur Rehman, 2017; Batool, Noureen, & Ayuob, 2019).

Sarwar, Yousuf, Hussain, and Noreen (2009) conducted a research to examine relationship of achievement goals and meta-cognition with academic success of 119 students enrolled in M. A. Education program at university of Sargodha, Pakistan. The analyzed data showed that their scores in mastery goals and performance goals had no significant correlation with their academic scores at different levels (matric, intermediate, and Bachelor). Moreover, mastery goals had no relationship with students' academic scores at master level but their performance goals had negative correlation with academic scores at master level. Moreover, no significant relationship was found between meta-cognition and academic scores at all levels. Furthermore, no significant gender difference was found in mastery goals, performance goals, and meta-cognition of the respondents.

Ambreen, Haqdad and Saleem (2016) conducted qualitative research to examine the role of distance education in fostering self-regulated learning students of M.Phil secondary teacher education program. The data was collected through focus group discussion and interviews. The analyzed data indicated that self-learning activities, reflective activities, assignments, and presentations in distance education are very effective sources to transform graduates as self-

regulated learners. Moreover, the teachers in distance education were found to be familiar with the strategies, exercises, and the interactive courses that help in developing self-regulated learners.

Alvi, Iqbal, Masood, and Batool (2016) conducted a qualitative focus group study on 37 students of two years Master's degree program at a university located in large urban city of Pakistan. The focus of this study was to explore the nature of self-regulated strategies used by university students. They concluded that students use a verity of self-regulated learning techniques ranging from shallow (repetition for memorization) to cognitively rich and deep processing (note-taking and consulting notes). The variation in SRL strategies depends on students' academic capabilities, semester, and requirements of assignments.

Aziz, Qureshi, and Khanam (2017) conducted a study on the university students of MS programs in the disciplines of Education and Psychology in four universities located at Lahore, Pakistan. The focus of this study was to examine gender difference in selected aspects (concentration, time-management, self-testing, and using academic resources) of self-regulated learning among university students. The results of the study indicated no significant difference between male and female respondents regarding concentration, time management, self-testing, and usage of academic resources. However, socio-economic status of students proved to be an influencing factor for students' self-regulation in learning.

Ur Rehman (2017) conducted research to examine the role of Learning Management System (LMS) in boosting self-regulated learning and academic achievement of university students studying at National University of Science and Technology, Islamabad, Pakistan. Quantitative approach was used to carry out this study. The analyzed data revealed that LMS supports students to gain better self-regulated learning skills and enhance academic outcomes.

Batool, Noureen, and Ayuob (2019) conducted a study to find out relationship between learning empowerment and self-regulation in learning of the university students in Lahore city, Pakistan. They found that the university students had high self-regulation in learning, and a significant high correlation was found between learning empowerment and self-regulation.

Review of related studies conducted in Pakistan indicates that the research on examining the impact of self-regulated behavior of university student studying in main stream is very limited. Mostly, the studies are qualitative or having very specific population. Therefore, these studies have very lesser scope for generalization. Furthermore, these have least consideration for causal link of self-regulated learning and academic performance. To bridge up this knowledge gape, a study was conducted to examine the impact of self-regulated learning behavior on the academic achievement of university students in Khyber Pakhtunkhwa with the following objectives:

i) To assess level of self-regulated skills of university students in Khyber Pakhtunkhwa.
ii) To find out academic achievement of university students.
iii) To examine the impact of self-regulated learning on academic achievement of university students.
iv) To examine gender difference in self-regulated behavior and academic achievement.

Method

For this study, a survey was used to address the research objective. In the research, process surveys are usually applied for collecting data from a large population and in typical surveys, a large sample of respondents is selected from the known population as Kelly et al, (2003) believed. Creswell (2003) is of the view that a survey technique can yield such benefits as to ascertain attitudes and it is a low cost and quick means of data collection.

All the students studying in the final semester of BS programs in the universities of Khyber Pakhtunkhwa constituted the population of this study. There were 4400 students studying in the final semester of different BS programs of the public sector universities of Khyber Pakhtunkhwa.

From the above population, a sample of 480 students was drawn using a multistage stratified random sampling technique. In this technique, the target population was divided into sub-sections usually called strata where a sample is chosen for every stratum as Chaudhry (1991) indicates that this technique is economical, accurate, and covers a large array of subjects. There were 21 public sector universities in Khyber Pakhtunkhwa. At the first stage, four universities (Hazara University, Gomal University DI Khan, University of Peshawar, University of Malakand) were selected by choosing 01university from each of the four administrative zones of the province. Within each university 120 respondents (60 male and female each) from BS programs of various departments were selected. In this way, 480 students (240 males, 240 females) constituted the total sample of this study. This sample was specifically selected from last two semesters of BS with age range 22-24 years.

The data was collected from the respondents via a questionnaire that was developed consisting of the concepts related to the topic under investigation. The first part of the questionnaire was about demographic information of the respondents such as Program, Semester, Department, University, GPA (in semester last attended), Marks obtained, and Total Marks. The questionnaire was intended to measure different aspects: time management (13 items), meta-cognition (18 items), academic self-efficacy (9 items), concentration and memory (6 items), study aid and note-taking (6 items), test anxiety and coping strategies (6 item), organization and processing of information (6 items), study skills (7 items), and motivation for learning (6 items). The questionnaire had overall 77 items and maximum time required for its filling was 80 minutes. All aspects had five-point Likert type scale for response i.e. SA= strongly agree, A=Agree, UD= undecided, DA= disagree, and SDA= strongly disagree.

The questionnaire was presented to experts in the field of education for feedback and it was duly improved in light of the suggestions of the experts. Afterwards, it was pilot tested on a small size of the sample. Finally, the questionnaire was improved in light of the observations noted during and after the pilot study.

The improved questionnaire was tested on a (statistically) small group (n=20) of respondents to identify any discrepancy, ambiguity, distraction or unforeseen problems such as the wording or flow of the statements, etc. The reliability (which was 0.94) of the instrument was determined through Cronbach alpha. The values of reliability coefficient were 0.840 for time management; 0.767 for metacognition; 0.785 for academic self-efficacy; 0.613 for concentration and memory; 0.643 for study aids and note-taking; 0.667 for test anxiety and coping strategies; 0.677 for organization and processing of information; 0.746 for study skills; and 0.791motivation for learning.

Overall, the questionnaire was reliable for the research purpose.

Data from the respondents was collected through questionnaire. At first stage, the researcher approached the administration of selected universities and got permission for data collection through a request letter from the parent university. Before collecting data, consent form was presented to respondents for their volunteer participation in the study. They were assured about confidentiality and secrecy of the information provided by them. The cooperation of departmental heads and teachers made it possible to get filled 440 out of 480 questionnaires with 92 % rate of return. In review of filled data, 32 questionnaires were rejected due to missing entries like GPA, obtained marks, and total marks etc., while five cases appeared as outlier during the process of screening. In this way data of 403 respondents was usable for the research purpose.

For measuring self-regulation scores of university students, sample mean and standard deviation were calculated and compared with the population mean. For determining the levels of self-regulation, Mean±2SD formula was used as suggested by Sharma and Jain (2014). The students with scores below Mean-2SD were taken as low, and score greater than Mean+2SD were taken as high while the scores in between were taken as average. For academic achievement, students' scores of the previous semester were collected and were converted in to standards score for using in research (Mangal, 2007). For findings the impact of SRL on academic achievement ANOVA was used for comparing academic achievement of students with different levels of self-regulation; and for finding gender difference, t-test was applied.

Results

Impact of SRL on the academic achievement of students: Pertaining to the impact of SRL behavior on the academic achievement of students, results of the analyzed data reveal that higher the level of self-regulated learning the higher the academic scores of students. SRL behavior and skills have significant impact on students' academic achievement. The detail of the impact of self-regulated learning on students' academic achievement is given below.

Table 1
Overall self-regulation score of the respondents

Population Mean	Mean Score	S.D
228	301.81	30.68

Table 1 shows the measure of overall self-regulation score of the university students. Mean score of the self-regulated learning is 301.81 with standard deviation of 30.68. Calculated mean is much higher than the population mean. Thus the respondents had higher level of SRL.

Table 2
Students' SRL level

Level of SRL	Frequency	%
Low	105	26
Average	201	50
High	97	24
Total	403	100

Table 2 shows students' standings on low, average, and high levels of SRL. The majority of the respondents (50%) stood at an average level of SRL, while 26% respondents had low level while 24 % respondents with high level of SRL. Overall respondents were at an average level of SRL.

Table 3

Measure of students' academic achievement

Mean Score	Max	Min	SD
300.00	401	172	34.94

Population Mean =250

The above table reveals that mean (St.) score of the students was 300.00 with 34.94 standard deviation. Thus majority of the respondents had a mean score higher than the population mean score (250).

Table 4

ANOVA showing difference of academic score among respondents having different levels of SRL

	Sum of Squares	Df	Mean Square	F	p
Between Groups	298043.430	2	149021.715	85.388	.000
Within Groups	698090.838	400	1745.227		
Total	996134.268	402			

Table 4 shows that respondents having different levels of SRL had a significant difference ($F= 85.388$, $P < 0.05$) in their academic achievement skills. The difference in academic achievement between pair of respondent-groups with different levels of self-regulated learning has been further elaborated in table No. 5 below.

Table 5

Post Hoc test showing difference of academic achievement between different pairs of respondents' groups having different SRL levels

(I) Level of Self-regulated Learning	(J) Level of Self-regulated Learning	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low level	Average Level	-42.21847*	5.09305	.000	-54.7318	-29.7051
	High level	-78.40479*	6.01621	.000	-93.1863	-63.6233
Average Level	High level	-36.18632*	5.18429	.000	-48.9238	-23.4488

*. The mean difference is significant at the 0.05 level.

Table 5 indicates the difference in academic achievement between the groups of respondents with different SRL levels. The comparison of respondents with low SRL levels and average SRL levels have a significant difference ($i - j = -42.21847$, $P < 0.05$) in their academic

achievement scores. The comparison of respondents with low self-regulated learning levels and high self-regulated learning levels (i – j = 78.40279, P <0.05) indicates the respondents with a high level of SRL had significantly higher academic achievement scores. Furthermore, in the comparison of the respondents with having an average SRL level and high SRL level, the respondents with a high SRL level had no significant higher academic achievement scores (i – j = -36.18632, P < 0.05) as compared to respondents with average SRL levels. The overall comparison indicates that respondents with high self-regulated learning level had high academic scores as compared to respondents having lower academic scores. Hence, the null hypothesis, there is no significant impact of SRL on the academic achievement of the students, was rejected.

Table 6

Gender differences in total SRL score

Comparison Group	N	Mean	SD	t	P
Male (M)	220	2.96	30.80	4.50	0.000
Female (F)	183	3.10	28.94		

Table No. 6 reveals a significant difference as the values (t = 4.50 & P < 0.05) between the total self-regulated learning mean score of male and female respondents at university level. The mean score of the female respondents (25.98) was greater than that of male respondents (21.20). The female respondents were significantly better in SRL behavior than male respondents.

Table 7

Gender Difference in different aspects of SRL Behaviour

Aspects of SRL	Gender	N	Mean Score	SD	t	p
Time management	Male	220	43.83	5.74	23.29	0.000*
	Female	183	54.37	2.94		
Meta-cognition	Male	220	70.18	9.94	1.329	0.185
	Female	183	68.90	9.42		
Academic self-efficacy	Male	220	35.76	5.35	1.308	0.192
	Female	183	35.07	5.22		
Concentration and memory	Male	220	21.20	2.88	20.60	0.000*
	Female	183	25.98	1.37		
Study aids and note-taking	Male	220	23.41	3.73	0.403	0.805
	Female	183	23.26	3.54		
Test anxiety and coping strategies	Male	220	24.25	3.75	0.247	0.805
	Female	183	24.34	3.82		
Organizing and processing information	Male	220	24.51	3.56	0.978	0.329
	Female	183	24.17	3.24		
Reading skills	Male	220	27.81	4.17	0.568	0.570
	Female	183	28.05	4.28		
Motivation for learning	Male	220	24.73	4.14	0.125	0.901
	Female	183	24.68	3.76		

* Significant at 0.05

Table 7 indicates that university students had no gender difference (P> 0.05) in the aspects of meta-cognition, academic self-efficacy, study aids and note-taking, test anxiety and coping strategies, organizing and processing information, reading skills, and motivation for learning. However, female students were significantly superior (p< 0.05) than male students in the aspects of time management, and concentration and memorization.

Table 8
Gender difference in academic achievement

Gender	N	Mean Score	SD	t	p
Male (M)	221	302.61	34.52	1.644	0.101
Female (F)	182	296.87	35.28		

Table 8 indicates that there was no significant difference (p>0.05) between the academic achievement of male and female respondents. Thus the null hypothesis, there is no significant difference between academic achievement of male and female students at university level, was accepted.

Discussion

The purpose of this study was to ascertain the impact of SRL on the academic achievement of university students, and find out gender difference in SRL behavior and academic achievement among university students in Khyber Pakhtunkhwa, Pakistan. The analysis of data reveals that university students possess SRL skills higher than average in Khyber Pakhtunkhwa. However 26% university students possess low SRL skills, and 50 % possess average level of SRL skills. The finding is consistent with the findings of the study conducted by Batool, Noureen, and Ayuob (2019) in Lahore city, Punjab province. These findings indicate the need of remedial measures to boost up students educational quality and preparation for future careers through enhanced learning skills and improved SRL behaviors.

Regarding the impact of SRL behavior on academic achievement, results of study indicate that the higher the level of self-regulated learning the higher the academic scores of the respondents with a significant difference (p < 0.05). Hence, SRL behavior and skills have significant effect on students' academic achievement at university level. These findings are aligned with the findings conducted by Ur Rehman (2017) who found a positive correlation between SRL scores and academic performance scores of the university students. Researchers in other countries have also recorded similar result of their studies. For example, Wolters, Pintrich and Karabenick (2003); Zimmerman and Schunk (2011); Rakes and Dunn (2010); Beishuizen and Stuffiens (2011); and Fadlelmula et al., (2015 also reported that self-regulated learning behavior has a significant effect on the academic achievement of the students. Similarly, the findings of Hong et al. (2009) show that SRL behavior is an important predictor for the academic success of the students in universities. Hence, the universally proved impact of SLR skills and behaviors necessitates that university students be supported to develop these skills and behaviors through orientations and interventions.

With reference to gender difference in SRL behavior and academic achievement, the present study indicated no significant gender difference in academic achievement but it showed overall supremacy of female respondents. Comparison of male and female respondents on different

aspects of SRL showed that female respondents were superior in only two aspects (time management, and concentration and memorization) out of nine selected aspects of SRL. These findings are contradictory to the findings by Aziz, Qureshi, and Khanam (2017) who found no significant gender difference in time management, and concentration and memorization. This difference in results may be due cultural difference or difference in schooling system Khyber Pakhtunkhwa and Lahore city. However, the supremacy of female respondents in time management, concentration and memorization seems to be very realistic in the light of general observations at universities.

Conclusion

It was concluded that the university students in Khyber Pakhtunkhwa possess SRL skills higher than average but majority of students do not seem to meet high standards of learning and quality education as they possess either low or average lever SRL skills and behaviors. This study also proves a positive causal link between SRL skills (behaviors) and students' academic achievement. Female students at university level possess better SRL behavior as compared to their male counterpart. However, this supremacy in SRL in only based on their better time management, and concentration on learning and memorization of the learning material.

Although sufficient standards and guidelines have been followed to conduct this study in order to examine effect of SRL skills and behavior on students' academic achievement, and find gender difference in these variables, the study lacks in exploration of means and ways that higher education institutions need to use for the improvement of students SRL behaviors and skills. The review of literature shows that in international scenario, this research falls at the status of replica study. However, it provides some guidelines for improving the students' SRL skills at universities because are assumed to be responsible for their studies and careers themselves (Bembenutty, 20ll). Therefore, the following recommendations flow from this research that the university students may be provided special training/ orientation in SRL. The directorate of Academics may be held responsible for arranging training for students at the university level in this regard. Furthermore, seminars and workshops be arranged to enhance their capacity for the more meaningful utilization of various factors of SRL that lead to have a better level of self-regulated learning. Further studies may be conducted to explore the means and ways that universities may use to develop the graduates as individuals with self-regulated behaviors.

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