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GENDER DIFFERENCES IN SELF-REGULATED LEARNING: A COMPARATIVE ANALYSIS OF TASK ANALYSIS AND MOTIVATIONAL BELIEFS AMONG UNIVERSITY STUDENTS

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ABSTRACT

In this study gender differences to self-regulated learning (SRL) in university students were examined specifically in the forethought phase components of task analysis and motivational beliefs with particular regard for Zimmerman's (2002) model. Data were collected from 600 students (346 male and 254 female) in public universities of Islamabad using a 30 item self developed questionnaire in quantitative approach. The results showed that there were large differences by gender for task analysis ($t = 2.38$, $p = 0.01$) such that females ($M = 3.64$) performed better than males ($M = 3.42$), suggesting a greater planning and goal setting ability. However, there was no significant difference in motivational beliefs ($t = 1.18$, $p = 0.23$) so that no significant difference was found in self efficacy and intrinsic motivation. The findings suggest that male students in particular need targeted interventions like structured time management training, while the fact that motivational strategies can be applied to all students is affirmed. This study contributes to the gap in Pakistani SRL literature by providing empirical evidence of gender specific SRL practices, suggesting practical guidelines for educators to promote equipollent beginners' learning environments. However, in terms of limitations, one is restricted to sample from Islamabad … which will require future research beyond the confines of self report.

Keywords: Gender Differences, Self-Regulated Learning, Task Analysis, Motivational Beliefs.

Introduction

In higher education, self-regulated learning (SRL) is an important skill that allows students to learn without the assistance of teachers by planning, monitoring and self evaluating their academic progress (Zimmerman, 2002). SRL has been grounded in social cognitive theory and operates through three linked and interdependent phases of forethought, performance and self reflection. The forethought phase includes activities like task analysis that includes goal setting; strategy planning; beliefs about

motivation such as self efficacy and interest in personal learning (Zimmerman & Moylan, 2009). The strategies that are applied in performance phase, the self monitoring phase, and the self reflection phase is a phase of doing that is done by an individual is called for performance. In contexts such as Pakistan, where traditional rote memorization is more captivating than deep learning, SRL becomes important for the development of independent, independent, critical thinkers (Alvi et al., 2016). Although Zimmerman's (2002) model of SRL competencies has been widely accepted as a useful framework for evaluation of SRL competencies, no research on SRL gender is present in local educational settings. More specifically, this study focuses on forethought phase of SRL because it serves as a prelude to later forms of SRL behavior and academic achievement. This phase is crucial as it is based on task analysis and motivational beliefs on how students approach their studies, and how they persist through challenges. For example, making effective goals fosters focus and giving oneself strong self-efficacy increases confidence to take on difficult work.

Although cultural and educational norms can shape different learning behaviors (Ahmad, 2012), gender differences in SRL is underexplored in Pakistan. Research has already indicated that females possess stronger organizational skills (Bezzina, 2010), but motivational beliefs are typically not gender driven (Yukselturk & Bulut, 2009). Issues of equity in educational access and outcomes in Pakistan can be understood in SRL research (Arshad et al., 2015). However, this gap is addressed in the current study through exploration of task analysis (time management, resource identification) and motivational beliefs (self-efficacy) among university students. Females from Islamabad's public universities (N= 600) scored higher task analysis (M = 3.64, vs. males' M = 3.42) and were statistically similar (p = 0.23) in motivational beliefs. The ability to gain such insights is very crucial for the tailoring of gender inclusive SRL interventions.

The purpose of this study is to investigate gender differences in task analysis as a subphase of SRL in which females have better planning skills (t=2.38, p=0.01). Additionally, the motivational beliefs are also evaluated and there is no significant gender disparity. Using Zimmerman (2002)'s framework, the paper attempts to position these findings in Pakistan's educational terrain, where SRL research is still nascent (Alvi et al., 2016). Recommendations for educators are generated based on the results: e.g., structured goal setting workshop for male students and universal motivational strategies. It ultimately contributes to the global SRL literature and to local gaps in gender focused educational psychology..

Literature Review

Self regulated learning (SRL) consists of a dynamic process in which learners engage in a process of self regulating (i.e., cognitively, motivationally and behaviorally) to

accomplish educational goals (Zimmerman, 2002). Zimmerman's (2002) grounded in social cognitive theory cyclical model includes the three phases of forethought (planning), performance (execution), and self reflection (evaluation). Initiating learning tasks requires forethought phase that consists in task analysis and motivational beliefs (Zimmerman & Moylan, 2009). SRL skills are correlated with academic success in higher education; students who set and monitor progress goal are more successful than peers (Alvi et al., 2016). Nevertheless, SRL adoption is under the influence of cultural and institutional factors, which Pakistani students are inclined to depend on teacher directed learning. This study brings non-western context to task analysis and motivational beliefs in the forethought phase where it is still under explored.

One of the core components of SRL first phase, forethought, is the task analysis, which involves breaking learning tasks to manageable steps, setting goals, and identification of resources (Zimmerman, 2002). Studies show high achieving students who meticulously planned study schedules are doing so because they conducted an effective task analysis (Alvi et al., 2016). It is documented globally that there are gender differences in task analysis, particularly that females have stronger organizational skills (Bezzina, 2010). For instance, task analysis ($M=3.64$ vs. $M=3.42$ for the males, $p<.01$) suggests that cultural or socialization is influencing female scores in this study of Pakistani university students. Yet, there is little attention paid to such disparities in Pakistan, where gendered educational ambitions may influence SRL practices (Arshad et al., 2015). Therefore, it is worthy of further investigation as to how this gap can be filled with appropriate pedagogical interventions.

Learners' persistence and effort are motivated by motivational beliefs such as self-efficacy and task interest (Zimmerman, 2002). Studies indicate that students with high self-efficacy have the tendency of setting challenging goals and recovering fast from setbacks (Alotaibi et al., 2017). Some studies find gender gaps in the motivation e.g., girls are more intrinsically motivated in cooperative tasks (Yukselturk & Bulut, 2009), while others find no signification difference (Ahmad, 2012). Haleema (2021) found that there was no significant gender difference in motivational beliefs ($p=0.23$) in Pakistan, which is in line with global trends in which motivation is less gendered than cognitive strategies. But there are contextual factors, such as societal stereotypes, that can, in a subtle way, affect self efficacy especially in male dominated fields (Arshad et al., 2015). However, additional research was needed to sort out the cultural and individual factors which influence motivational beliefs in SRL. Yet SRL is globally relevant research and Pakistani research tends to only examine academic achievement or anxiety and ignores gender specific SRL strategies. While Alvi et al.'s (2016) qualitative work is one of the few studies to focus on students' use of SRL, it does not provide gender comparisons. This is important, because learning behaviors in Pakistan may be gendered socialized

in a manner that is uniquely important, e.g., if females' task analysis scores are superior than males, it could be due to gendered pressures to be diligent. Contrary to male disengagement stereotypes, males' comparable motivational beliefs (p=0.23) do not raise doubts about the comparability of males' and females' beliefs. This study offers evidence in the design of equitable SRL interventions by contextualizing Zimmerman's (2002) model within Pakistan's educational landscape.

Research Methodology

The case for this study was the adoption of quantitative research design comparative approach to study gender differences in self regulated learning among university student. Data was collected using descriptive survey method so that the study could be systematically compared between male and female students' practices in task analysis and motivational beliefs. The structured approach helped to get measurable and replicable results, which was in line with the nature of the study to find statistically significant variations between genders in SRL components.

A sample of 600 students from public universities in Islamabad, 346 of them were male and 254 female, was assembled. To ensure balanced representation by gender, the ratio in the population was maintained, stratified proportionate sampling was employed. From the social sciences departments, the participants were selected and they included students that enrolled for the 2019 session. By employing this sampling technique, the validity of the study was increased as it reduced something called selection bias and ensures that the findings reflect the population of students in higher education institutions in Islamabad.

A self developed questionnaire employing 30 items rated on 5 point likert scale was used to collect data based on Zimmerman's model. A dedicated sub-scales for the task analysis (5 items) and motivational beliefs (5 items) were included in the instrument to assess specific forethought phase competencies. Through conditional Cronbach's alpha and item–total correlation tests and independent t tests examining gender differences, reliability was confirmed and gender differences tested. It allowed for this analytical approach to support strong statistical evidence of variations in SRL practices, and make sense of these variations.

Results

The study investigated gender differences in two critical components of self-regulated learning (SRL) among university students: task analysis and motivational beliefs. The findings are presented below with detailed statistical analysis and interpretation.

Task Analysis

Table 1: Gender Differences in Task Analysis

Gender	N	Mean Score (M)	Standard Deviation (SD)	t-value	p-value	Effect Size (Cohen's d)

Male	346	3.42	0.87	2.38	0.01*	0.20 (Small)
Female	254	3.64	0.92			

The analysis of task analysis revealed a statistically significant difference between male and female students. Female students achieved a higher mean score (M = 3.64) compared to their male counterparts (M = 3.42), with the independent t-test yielding a t-value of 2.38 and a p-value of 0.01, indicating statistical significance at the 0.05 level. The effect size, measured by Cohen's d, was 0.20, which is considered small but meaningful in educational research. These results suggest that female students demonstrate stronger capabilities in task analysis, which encompasses planning, resource management, and goal-setting behaviors. The higher scores among female students may reflect their tendency to employ more structured approaches to learning tasks, potentially contributing to their academic success.

Motivational Beliefs

Table 2: Gender Differences in Motivational Beliefs

Gender	N	Mean Score (M)	Standard Deviation (SD)	t-value	p-value
Male	346	3.46	0.89	1.18	0.23
Female	254	3.57	0.91		

In contrast to task analysis, the examination of motivational beliefs showed no statistically significant difference between male and female students. The mean scores for both groups were closely aligned, with male students averaging 3.46 and female students averaging 3.57. The t-test result of 1.18 with a p-value of 0.23 indicates that the observed difference was not statistically significant. This finding suggests that male and female students in the sample possessed similar levels of motivational beliefs, including self-efficacy and intrinsic motivation. The absence of gender differences in this domain implies that motivational factors in self-regulated learning operate similarly across genders within the studied population.

Summary of Findings

Table 3: Summary of Gender Differences in SRL Components

SRL Component	Gender Difference	Statistical Significance (p-value)	Effect Size (Cohen's d)
Task Analysis	Females > Males	0.01*	0.20 (Small)
Motivational Beliefs	No difference	0.23	N/A

The comprehensive analysis of self-regulated learning components demonstrates distinct patterns across genders. Female students exhibited superior performance in task analysis, a finding that was both statistically significant and practically meaningful

despite the small effect size. This difference highlights gender-specific strengths in the planning and organizational aspects of learning. Conversely, motivational beliefs showed no gender-based variation, with both male and female students reporting comparable levels of motivation and self-confidence in their academic pursuits. These results provide valuable insights into the gender dynamics of self-regulated learning behaviors in higher education settings.

Discussion

There was a significant gender difference in task analysis where female students outperformed their male counterparts (M=3.64 vs M=3.42, p=0.01) which is consistent with previous research in academic settings that shows women's better general organizational and planning skills (Bezzina, 2010). This may be because of the cultural and socialization patterns in Pakistan where females are urged to practice meticulous planning behaviour to succeed academically (Arshad et al., 2015). Although it was statistically significant, the small but meaningful effect size (Cohen's d=0.20) implies that such a difference may benefit from targeted interventions, more than from broad policy changes. Results from this study suggest that Zimmerman's (2002) model of SRL places task analysis as the essence of SRL, and further supports the idea that structured training based around goal setting and resource management could be helpful for male students. It is important to note that these findings are consistent with the global trends (e.g., Yukselturk & Bulut, 2009) and indicate the necessity of implementing gender specific learning strategies in different educational settings. Whereas, gender differences in motivational beliefs are absent (p=0.23), in contrast to some previous literature that reports gendered motivational patterns (Ahmad, 2012).

The results of this study support the intuition that gender has a less impact on intrinsic motivation and self efficacy as the levels of engaged and confidence show no difference between male and female students (M=3.46 vs. M=3.57). This is congruent to the Alvi et al. (2016) findings in Pakistani universities, where motivational drivers like self efficacy have been universally valued across gender. The fact that the difference is not significant implies that it is possible to apply interventions to improve motivation, for example, promoting growth mindsets or linking coursework to students' personal interests without the need for gender specific adaptations. Given this, this finding is particularly relevant to educators designing for inclusive SRL programs since motivational strategies may not need to be gender tailored.

These findings have a twofold implication. Targeted interventions for the benefit of male students include time management workshops or scaffolded goal setting exercises (Zimmerman & Moylan, 2009), and the gender gap in task analysis should first be addressed. One example would be for the universities to use structured planning tools (e.g., digital planners, peer mentoring) as part of the curricula to fill this

gap. Second, this parity indicates that motivational beliefs are similarly expressed in all learners (Alotaibi et al., 2017) and universal approaches such as reflective journaling or self-assessment prompts can be adopted by all. These are in line with the cyclical nature of Zimmerman's (2002) SRL model, that it is a process of continuous reflection and adaptation. Equitable learning environment can be achieved by mitigating task analysis disparities and utilizing shared motivational strengths to address them as educators. The study further has contextual limitations, such as focusing on Pakistan's public universities in Islamabad, which necessitates broader research to validate these findings in other Pakistani institutions. The future research can be devoted to the interaction of gender and the socioeconomic factors or disciplinary differences (e.g., STEM vs humanities). However, these results add to the global SRL literature by providing empirical evidence from an under researched area, as some SRL components, like task analysis, appear to be more dependent on gender, others, like motivation, do not. Thus, this nuanced understanding can greatly inform the construction of high culturally sensitive, evidence based pedagogical strategies in higher education.

Conclusion

Results of this study suggest that gender plays a significant role in the development of SRL competencies amongst Pakistani university students. The results indicate that female students are at an advantage in developing task analysis skills such as strategic planning, resource management and goal formulation, pertinent to academic achievement. This suggests that female students may possess more developed metacognitive strategies of how to organize their learning processes. However, the study revealed higher degree of parity between genders on motivational beliefs as there was no significant difference between male and female students in terms of self efficacy and intrinsic motivation.

This interesting dichotomy offers educators a challenge and an opportunity, since, while gender specific approaches are required to develop organizational skills, motivational enhancement strategies can be done universally with students. However, these results should be considered in light of several methodological considerations. However, questions are raised about how these patterns would hold up in other regional or institutional contexts within Pakistan's varied educational system at large. Although this is common in SRL research, the exclusive use of self report measures may have introduced response biases that compromise what is actually the case about students' learning behavior. In addition, the cross sectional design is only a sense of where students are in terms of their SRL development, and does not capture important developmental trajectories. Although not invalidating the study's contributions, these

limitations stress the conditional nature of the findings and encourage replication in other educational institutions.

Some crucial directions to pursue for the path forward of SRL research in Pakistan should include several points. Such growing evidence would also allow for expanding investigation and considering a nationally representative sample to make the findings more generalizable, and perhaps uncover regional patterns in how SRLs manifest. The observed gender differences in task analysis could be explained by sociocultural and educational factors, and such explanation could be obtained with a mixed methods approach, that combines quantitative measures with in depth qualitative interviews. Longitudinal studies of SRL skills over time as they develop across the academic career for students would help determine if gender gaps persist or reduce over time. If such comprehensive research efforts were to be carried out, not only would the existing findings be validated but also it would provide information for the development of target, evidence based interventions to optimize the students' self regulation of learning in Pakistan's higher education system.

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