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Learning Styles and Self-Regulation: An Exploratory Study among University Students in India

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Abstract:
Learning styles and Self-regulation play a significant role in determining performance not only in academic sphere but also in career front. This further influences one's efforts invested towards self-improvement. Individuals vary in their learning styles. The objectives of the present study are to explore the learning styles, self-regulation of students and also to examine the role of self-regulation on student's learning styles. Purposive sampling method was used to select participants consisting of 100 adolescents in the age range of 17 to 20 years. Grasha Riechmann Student Learning Style Scale (measuring six learning styles - independent, avoidant, collaborative, dependent, competitive, participant) and Adolescent Self-Regulatory Inventory (having two dimensions- short term self-regulation and long term self-regulation) were administered. Most of the university students displayed use of certain learning styles and less of other learning styles. Students with high self-regulation and low self-regulation differed in their learning styles. Results also showed that there was a significant relation between self-regulation and some of the learning styles.

Keywords: *learning styles, self-regulation, university students*

1. Introduction

Learning plays a crucial role in success in all human endeavours. This learning process is influenced by various internal and external factors. The external factors are the political, economic and socio-cultural contexts. The internal factors which play a significant role in the process are one's perception, cognition, motivation, personality, world view, etc. Among the internal factors, self-regulation and learning styles have a greater effect on one's learning as these determine an individuals' receptivity levels (Iran-Nejad, 1990). In this context, the present study focuses on self-regulation and learning styles of the students pursuing higher education.

Self-regulation is the management of one's own behavior without external control or monitoring. It includes controlling one's impulses, delaying gratification, managing desires in the short term as well as long term, and directing behavior towards a desired direction. There are two major dimensions - long term self-regulation and short term self-regulation. Long term self-regulation refers to goal directed behavior for long term goals and short term self-regulation refers to behavior with short term goals. Self-regulation is applicable in a number of areas of an individual's life. Some of the areas being-managing health and illness, managing one's emotions, efforts directed towards personal and occupational goals, etc. When applied to learning it describes a process of taking control of and evaluating one's own learning and behavior and is called self-regulated learning.

Learning is the acquisition of knowledge or skills by studying, practicing, being taught or experiencing something. Learning style encompasses the system that an individual uses in acquiring knowledge or skills. Theories suggest that there are certain common patterns in some of the learning which have been identified and classified. Grasha (1996) has defined learning styles as, "personal qualities that influence a student's ability to acquire information, to interact with peers and the teacher, and otherwise participate in learning experiences". According to Reichmann and Grasha (1974), learning styles can be broadly classified into six major types of learning styles – independent, dependent, avoidant, participant, collaborative and competitive. These learning styles are not mutually exclusive in their use by various individuals. Everyone utilizes a mix of these learning styles, though they may use more of one style.

There may also be variations in the learning style used depending on the context and the situation (Auyeung and Sands, 2009, Heikkila and Lonka, 2006; Ajisuksmo and Vermunt, 1999).

Research on learning styles of students has found that it contributes to academic outcomes with specific learning styles leading to better academic performance (Boyle, Duffy and Dunleavy, 2003; Heikkila and Lonka, 2006; Busato, Prins, Elshout and Hamaker, 2000; Cassidy and Eachus, 2000). The theories of learning style, propounded by others, such as Kolb (1981), focus on the sensory modalities of the information and its role in learning. Teachers have acknowledged the differences in learning and have also tried to include the same in their teaching method. With improving technology, it is easier to accommodate varied learning styles by directing students towards individualized learning aids such as reading material, or educational audios and videos, models and material, etc. However, it is not possible to teach keeping in mind every single student's preferred learning style. Grasha and Reichmann's learning style categorize the overall attitude and behavior of students towards learning.It emphasizes the student's attitude towards learning itself, his belief about who is responsible for his learning. It also looks at his behavior vis-à-vis his peers and in the classroom environment.

Indian students experience a sea change in the learning environment in the transition from school to university. Teaching and learning are closely monitored by the parents and teachers upto high school. It is only at the university level, where freedom for the students, brings their natural learning style to the forefront. As such, exploring the learning style has an important role in understanding the academic performance of the students. Secondly, exploring the self-regulation of the students, which forms the platform or base for immediate or delayed gratification in relation to academic performance is crucial. This study also aims to determine the role of self-regulation, long term self-regulation and short term self-regulation and overall self-regulation in the learning styles of the University students.

2. Method

2.1. Design

Survey method and a between group design were used for the present study. The study aims to explore the learning styles and self-regulation of university students of the twin cities of Hyderabad and Secunderabad in India.

2.2. Participants

The study included 100 students who were selected from different faculties of arts and sciences of a central university in the metropolitan city. The students were either in the first or the second year of a five year integrated masters programme. The participants were in the age range of 17 to 20 yrs with mean age of 18.31years. 39% of the participants were boys and the remaining 61% were girls.

2.3. Research Instruments

Two tools were administered on the participants of the present study. The first tool used in the study was the Grasha- Reichmann Learning Style Scales (GRLSS) that has been used to identify the preferences learners have for interacting with peers and the instructor in the classroom setting (Grasha, 1996). Grasha and Reichmann developed GRLSS in 1974 to determine college students' styles of classroom participation. The Grasha- Reichmann model focuses on student attitudes towards learning, classroom activities, teachers, and peers. The GRLSS consists of 60 questions that are to be responded on a 5 point Likert Scale. The total score of each style and its corresponding mean is calculated and matched with the norms given according to the participant's age. Norms are available for 17 years to 46 years. The score indicates a participant's preferred learning style which could be any of the six learning styles. The 6 learning styles are 'avoidant', i.e. not enthusiastic about learning and not interested and/or overwhelmed; 'independent', i.e. like to think for themselves, confident in their learning abilities; 'collaborative', i.e. learn by sharing ideas and talents, cooperative and like to work with others; 'dependent', i.e. little intellectual curiosity and learn only what is required; 'competitive', i.e. learn material in order to perform better than others and feel that they must compete for rewards; 'participant', i.e. good citizens and enjoy going to class and take part in course activities as much as possible. The styles are not mutually exclusive and a participant can have any number of learning styles.

The second tool was the Adolescent Self Regulatory Inventory (ASRI) (Moilanen, 2007) which is a questionnaire that taps two temporal aspects of self-regulation (self-regulation in the short and long term). Short term self-regulation means self-regulation for a short period of time and long term self-regulation means self-regulation for a long period of time. The tool consists of 36 items that have to be answered on a 5 point Likert scale ranging from '1' to '5'. The tool has two mutually exclusive dimensions – short term self-regulation and long term self-regulation. There are 13 and 14 items to measure short term self-regulation and long term self-regulation respectively. Additional 7 items along with these 27 items give a score for overall self-regulation. Scoring of the tool is as per the manual. Score for short term self-regulation ranges from 13 to 65, for long term self-regulation ranges from14 to 70 and for overall self-regulation ranges from 36 to 180 with a higher score on the tool indicating greater ability to self- regulate.

2.4. Procedure

The sample was selected through purposive sampling. Participants were approached and their informed consent was obtained before the research tools were administered. Scores were calculated and tabulated. Percentages, t test, and correlation coefficient were calculated.

3. Results

The first objective was to explore the learning styles as reported by the university students. Table 1 shows the gender wise distribution of learning styles among university students. It can be seen that avoidant learning style is reported by 86% of the students followed by independent learning style, competitive learning styles, dependent learning style and collaborative learning style. Participant learning style is reported by around only a quarter of the students.

	Gender		
	Male (39%)	**Female (61%)**	**All (100%)**
Independent learning style	26 (66.67)	45 (73.77)	71
Avoidant learning style	33 (84.62)	53 (86.89)	86
Collaborative learning style	20 (51.28)	34 (55.74)	54
Dependent learning style	29 (74.36)	41 (67.21)	70
Competitive learning style	26 (66.67)	44 (72.13)	70
Participant learning style	12 (30.77)	15 (24.59)	27

Table 1: Distribution of learning styles across gender

The second objective of the study was to explore the self-regulation of the students. The third objective of the study was to determine the role of short term self-regulation, long term self-regulation and overall self-regulation in the learning styles of university students. Independent t test was calculated to see the differences in the learning styles of students with low and high level of short term self-regulation, with low and high level of long term self-regulation and with low and high level of overall self-regulation. These results are presented in the following table 2, 3 and 4 respectively.

	Short term Self-regulation		***p***
	High	**Low**	
Independent Learning Style	3.67 (0.58)	3.62 (0.54)	0.76
Avoidant Learning style	2.96 (0.68)	3.08 (0.71)	0.39
Collaborative Learning Style	3.60 (0.74)	3.78 (0.70)	0.23
Dependent Learning style	3.59 (0.54)	3.68 (0.95)	0.59
Competitive Learning Style	3.08 (0.70)	3.19 (0.77)	0.45
Participant Leaning style	3.59 (0.55)	3.61 (0.57)	0.84

Table 2: Independent t test results of short term self-regulation

There was no significant difference between individuals low on short term self-regulation and high on short term self-regulation with respect to their learning styles as evident from table 2.

Table 3 presents independent t test results of long term self-regulation on learning styles. Students with higher level of long term self-regulation had a more participant learning style than those students who were low on long term self-regulation.

	Long term Self-regulation		***p***
	High	**Low**	
Independent Learning Style	3.76 (0.50)	3.55 (0.60)	0.06
Avoidant Learning style	2.94 (0.73)	3.11 (0.65)	0.25
Collaborative Learning Style	3.82 (0.63)	3.58 (0.79)	0.09
Dependent Learning style	3.71 (0.88)	3.57 (0.66)	0.38
Competitive Learning Style	3.12 (0.80)	3.15 (0.67)	0.85
Participant Leaning style	3.82 (0.44)	3.38 (0.58)	0.00**

Table 3: Independent t test results of long term self-regulation
*Note. **significant at 0.01 level*

Independent t test results of overall self-regulation are presented in Table 4. Students with low levels of overall self-regulation had a more avoidant learning style and competitive learning style in comparison to those students who were high on self-regulation.

	Overall Self-regulation		***p***
	High	Low	
Independent Learning Style	3.72 (0.50)	3.59 (0.60)	0.25
Avoidant Learning style	2.88 (0.72)	3.17 (0.65)	0.04*
Collaborative Learning Style	3.78 (0.72)	3.61 (0.73)	0.24
Dependent Learning style	3.73 (0.88)	3.55 (0.66)	0.25
Competitive Learning Style	2.99 (0.78)	3.28 (0.67)	0.04*
Participant Leaning style	3.68 (0.51)	3.52 (0.60)	0.17

Table 4: Independent t test results of overall self-regulation
*Note. *significant at 0.05 level*

The relationship among the different learning styles is evident in the correlation matrix presented in table 5. Short term self-regulation did not have any relationship with the learning styles. However, it was seen that students having higher levels of long term self-regulation used more independent, collaborative, dependent and participant learning styles. Students with avoidant learning style had low levels of long term self-regulation. Looking at overall self-regulation it was seen that students with high levels of self-regulation had used more independent, dependent and participant learning styles and less of avoidant learning style.

	1	2	3	4	5	6	7	8	9
1. Short term Self-regulation	1	0.23*	0.67**	0.02	-0.15	-0.12	-0.02	-0.02	0.06
2. Long term Self-regulation		1	0.79**	0.29**	-0.21*	0.25*	0.21*	0.03	0.41**
3. Overall Self-regulation			1	0.21*	-0.29*	0.19	0.21*	0.003	0.33**
4. Independent Learning Style				1	-0.21*	0.33**	0.19	0.22*	0.50**
5. Avoidant Learning style					1	-0.06	0.07	0.27**	-0.31**
6. Collaborative Learning Style						1	0.57**	0.20	0.47**
7. Dependent Learning style							1	0.52**	0.36**
8. Competitive Learning Style								1	0.34**
9. Participant Leaning style									1

Table 5: The correlation matrix of self-regulation and learning styles
*Note. *significant at 0.05 level, **significant at 0.01 level*

4. Discussion

University students reported a wide range of learning styles which have been assessed in the study. However, few learning styles were more predominant than others. Avoidant learning style was reported by a large number of students. Students with this kind of learning style don't take responsibility for their learning and hence show poor organization of work, high level of absenteeism and this leads to low grades. The next most prevalent learning style was the independent learning style characterized by a preference for working by oneself. Students with a preference for this learning style like to work at their own pace, design their projects and want to have greater input, in what they are learning and decide for themselves what is important.

A large number of students also reported dependent and competitive learning style. Both these styles are characterized by a preference for a more dominant teacher's role in the classroom environment. Students are dependent on the teachers for elucidating clearly what is expected of them and get frustrated when there is a deviation from the traditional teaching and learning process, characterized by the teacher providing most of the learning material. As understood from the term competitive learning style reflects the students' desire for recognition and reward. Further their interaction with peers in the classroom is affected by this competitiveness.

Collaborative learning style is preferred by a little over half of the students. Small groups of students working together on projects, group discussions, in class and group projects are some aspects of this learning style. The last learning style is a participant and only a little over a quarter of the students report this. The most characteristic feature of this style is the acceptance of oneself as being responsible for one's learning and this dictates the students' behavior. Students tend to actively participate in class and discuss extensively with their peers as well as their teachers. Unfortunately, very few of the university students have reported this learning style.

It was also found that long term self-regulation had a significant role in participant learning style with those with higher long term self-regulation displaying more of this learning style. Students with lower overall self-regulation had more avoidant and competitive learning styles. However, short term self-regulation did not seem to play a role in the learning styles of university students.

When the relationships between self-regulation and learning styles were analyzed it was reinforced that short term self-regulation does not influence students' learning styles. Increasing levels of long term self-regulation were associated with greater levels of participant, independent, collaborative and dependent learning styles and lower levels of avoidant learning style. Increasing levels of overall self-regulation were associated with greater levels of participant, dependent and independent learning styles and lower levels of avoidant learning style.

Higher education is marked by, reduced external regulation on students with regard to their learning. University students are expected to regulate themselves towards desired academic outcomes. At the same time, it has been found that students beginning university education display greater lack of regulation (Vermunt, 1987) and lower self-regulation. Self-regulation plays a decisive role in academic outcomes at the university level. Students unable to regulate their behavior in accordance with the university rules, course, classroom and teacher requirements may experience associated problems such as frustration, anxiety, depression, dropout, academic failure, etc.

Higher education in India is transforming with the advent of technology. Students now have access to a vast knowledge and can become aware of developments in the subjects of their interest and course. It is not humanly possible for the teachers to convey all the information on a particular topic to the student. Students will have to initiate learning on their own to develop their competence in a subject matter. At the same time university students have the means to further their academic interests if they chose to do so. In this context, the degree of self-regulation among university students can be critical in determining the academic achievements of the students not only while pursuing the academic programmes, but also at the end of the programme.

The findings of the current study have brought to light that self-regulation, and in particular long term self-regulation, influences the learning styles of university students. This shows that the influence of self-regulation on a student's academic performance is substantial. Further, students high on self-regulation exhibit certain learning styles. Hence, by enhancing greater levels of self-regulation in students, certain learning styles can also be encouraged which could lead to improved academic performance. So, self-regulation could have both direct and indirect benefits on the academic achievement of university students.

5. Conclusion

The study is limited in drawing some conclusions as it did not measure the actual academic performance of the students. Also, the study was cross sectional and did not look into whether the levels of self-regulation varied in the students depending on the year of their study. However, some pertinent findings have been obtained through this study. The high preponderance of avoidant learning style and the low use of participant's learning style gives a strong indication about university students' academic attitude and behavior. Further, the role of self-regulation on learning styles suggests the need for intervention that could have the dual benefits of enhancing self-regulation and thus modifying learning styles to improve academic outcomes.

A self-regulation based intervention could influence the learning styles of the students. This would indirectly help in improving students' academic performance, which would be sustainable in the long run rather than only being marks/grades oriented. For a given programme of study, sustainable learning and subsequent performance are essential for maintaining continued standards in the academic sphere across generations. This would help in the optimum development of human resources, where the knowledge, competencies and skills would be utilized for the welfare of all.

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