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Learning Styles Preferences Among Faculty Members and Pharmacy Students in Pakistan

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Abstract

Introduction: Every individual is unique in its way of learning and single teaching method is not effective for every student. Learning styles theories are beneficial at all educational levels and focusing on individual learning styles makes the learning process more effective.

Objective: The aim of the study was to evaluate the learning styles among pharmacy students and faculty members in Pakistan.

Methodology: A descriptive cross-sectional study design was used. Learning styles were measured using Kolb's learning style Inventory using convenience sampling technique. The calculated sample size was 1146 for students and 100 for faculty members and was calculated by Raosoft sample size calculator at 95% confidence interval and 5% margin of error. After data collection, the data was cleaned, coded and entered in SPSS version-21 and analyzed statistically.

Results: The results showed that reflector style was the most dominant learning style among faculty members with mean score (17.64±1.89) followed by pragmatist having mean score (16.60±1.89), theorist (15.64±1.98) and activist (11.82±3.41).Similarly, for the Pharmacy students the most preferred learning style was reflector with mean score (15.71±2.79) followed by pragmatist with mean score (15.30±2.61), theorist (14.68±2.25) and activist (12.85±3.11).

Conclusion: The present study concluded students and faculty had different learning preferences, and one and more learning styles might be dominant. Preference for reflector style was found more common among young male faculty members as well as students.

Keywords: Learning styles; Preferences; Pharmacy faculty members; Pharmacy students; Educational period; Methodology; Critical thinking; Adoption; Approach; Pharmacist; Traditional curriculum; Respondents

Introduction

Pharmacy education plays a crucial role in defining the qualities of pharmacist that work in health care system. In order to ensure pharmacy professional competencies and to meet the demands of emerging roles of pharmacist, pharmacy education has gone through substantial evolution over the recent years [1]. Various learning style models and theories have gain attention during the last two decades throughout the world. A mutual consensus has been developed that every student has a diverse way of learning and a single teaching method is not effective for every student [2]. During the educational period, students face different challenges which produces an impact on their learning process [3]. Students require good academic and time management skills in order to avoid distractions [4]. Relevant teaching style in accordance with learning styles lead to improved student attitudes and academic achievement.

Pharmacy curriculum involves critical thinking of new ideas, linking of these ideas to already known concepts and applying knowledge for problem solving activities [5]. Similarly, faculty teaching methodology and preference towards a certain teaching style differ from each other. Teaching methodology is to comprehend subject knowledge into practice for conducting learning activities including class tasks management, course coverage and interaction with students [6]. Over the recent years, extensive studies have been conducted to explore different approaches used for learning because of its strong relation with educational process, student's performance, level of understanding and learning outcomes. A study in India reported that adoption of different teaching methods makes the educational experience more promising [7]. Similarly, a study in Portugal concluded that it was possible to relate student's

questions to their learning styles and approaches. Learning styles encourage preceptors to use teaching methods that help students to develop critical thinking during pharmacy practice experiences [8]. Students are more actively involved in learning process through cooperative methods which enhance their ability of utilizing cognitive skills such as problem solving and creative thinking [9]. The link between learning, teaching and assessment strategies promotes better understanding of topic and critical thinking. Problem based learning (PBL) approaches produces a positive impact on the learning process [10].

Likewise, in developing countries, studies reported that adoption of different learning styles increased the teacher-student understanding of the subject and allowed teachers in providing a better support to their students which helped to enhance their learning process [11]. The content when taught in different manners by the faculty developed learning skills among students [12]. Active learning is enhanced in larger group of students by demonstration, discussions, presentation of models, debates and answering questions [13]. Rapid interest over past decade and change has been observed in educational process in Pakistan. More active participation of students has been reported in classrooms [14]. Student's perceptions regarding learning environment is positive and assessment of learning environment has been beneficial for quality improvement in learning [15]. Traditional curriculum does not support flexible and adaptable teaching styles. Teaching styles are influenced by curriculum, gender, teaching strategies, faculty rank. To train teachers, effective faculty development should be designed and implemented [16]. Literature supports that extensive studies have been conducted regarding learning style preferences in US, UK, Malaysia etc. Moreover, in Pakistan less attention has been given to individual learning styles and its implication in education. There is unawareness among students and faculty members regarding different learning styles. Similarly, conventional instructional strategies are used over the years by faculty members without keeping in mind the individual student's learning preference.

The scope of Pharmacy Profession has been rapidly improving in Pakistan therefore it is necessary for Pharmacy faculty members and students to realize the importance of learning styles. Till date, learning/teaching styles have been assessed among medical professionals in Pakistan but no study to the best of our knowledge has been conducted to assess learning preferences among pharmacy faculty and students. Therefore, the present study was designed to explore preferences of pharmacy students and faculty members for different learning styles in Pakistan.

Methodology

A descriptive cross-sectional study design was used. All private and public universities situated in Islamabad were included in this study. Study respondents included undergraduate students of Pharm. D program and faculty members teaching Pharm. D students. All batches of Pharm. D program from first professional year till final year were included. All the faculty members, teaching currently whether visiting or permanent were included in the study. Teachers and students who were not willing to participate were excluded from the study. Ethical approval was taken from Ethical committee of Hamdard University (ref no ERB/HU/785). Beside this approval was also taken from Head of Departments (HOD) of respective public and private universities. Apart from this, written consent from the respondents involved in the study was also taken and confidentiality of information was also assured. Sample size was calculated using Raosoft® calculator at 95% confidence interval and 5% margin of error which was 382 for each University. Thus, the total calculated sample size for students was 1146 and 100 for faculty members. However, the response rate for students was 80% (n= 920) and for faculty was 64 % (n=64). For this study, convenient sampling technique was used to select all available respondents that were present at the time of data collection.

A pre-validated tool Kolb's learning style questionnaire was used to assess preferences for both the learning styles of students and teaching/learning styles among faculty. The questionnaire contained 80-items, each item having binary scale answer (Yes, No). for each agreed (yes) answer one point was awarded and no point is given to disagreed (no) answer. For learning style, subscales measured were namely activist, reflector, pragmatist and theorist. Scores of different learning styles are given (Table 1). The questionnaire was self-administered to respondents by the data collectors. Questionnaires were collected back on same day to avoid biasness. After data collection, the data was cleaned, coded and entered in SPSS version-21 and analyzed statistically. Descriptive statistics comprising of frequency and percentages were calculated.

Table 1: Scores of Different Learning styles.

Learning styles	Maximum Scores
Activist	13-20
Reflector	18-20
Pragmatist	17-20
Theorist	16-20

Results

Out of 64 faculty members, 45.3% (n=29) were males while 54.7% (n=35) were females. Of the total respondents, 7.8 % (n=5) had done Pharm. D, 53.1 % (n=34) were M.Phil. and 39.1% (n=25) were Ph.D. Regarding the teaching experience, 20.2 % (n=13) of the faculty members had less than one year teaching

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experience, 50 % (n=32) had one to five year experience, 23.4 % (n=15) had 6 to 10 year experience while 6.3 % (n=4) had 10 to 15 year of experience in teaching. Regarding the employment status, 4.7% (n=3) were visiting faculty members and 95.3 % (n=61) were permanent faculty. On the other hand, out of 920 Pharmacy students, 33% (n=304) were males while 67% (n=616) were females. Of the total respondents, 22.5% (n=207) were studying in public sector while 77.5% (n=713) were enrolled in private sector universities. Results showed that 19.3% (n=177) students were studying in first professional year, 21.8 % (n=201) were from second professional year, 23% (n=212) from third professional year, 22% (n=202) from fourth professional year and 13.9 % (n=128) from final professional year. Ninety five percent of the students (n=872) were from English medium schooling system and 5.2 % (n=48) were from Urdu medium background (Table 2).

Table 2: Demographic Characteristics of Pharmacy Faculty and Students.

Indicator	n (%)	Indicator	n (%)
Faculty		**Students**	
Gender		**Gender**	
Male	29(45.3)	Male	304 (33.0)
Female	35 (54.7)	Female	616 (67.0)
Age		Age	
25-35	41 (64.1)	17-19	211 (22.9)
35-45	21(32.8)	20-22	585 (63.6)
45-55	2 (3.1)	23-25	124 (13.5)
55-60 and above	0		
Qualification		**Current Professional Year**	
PharmD	5 (7.8)	1st Prof	177 (19.3)
M. Phil	34 (53.1)	2nd Prof	201 (21.8)
Ph. D	25 (39.1)	3rd Prof	212 (23.0)
		4th Prof	202 (22.0)
		5th Prof	128 (13.9)
Marital Status		**CGPA**	
Single	27 (42.2)	Less Than 2.0	12 (1.3)
Married	37(57.8)	2.0-2.5	195 (21.2)
		2.5-3.0	238 (25.9)
		3.0-3.5	225 (24.4)
		3.5-4.0	250 (27.2)
Teaching Professional year		**City of Residence**	
1st Prof	17 (26.6)	Federal	407 (44.3)
2nd Prof	10 (15.6)	Punjab	490 (53.3)
3rd Prof	12 (18.8)	Sindh	3 (0.3)
4th Prof	17 (26.6)	Baluchistan	1 (0.11)
5th Prof	8 (12.4)	KPK	14 (1.52)
		AJK	5(0.5)
City of Residence		**Medium of Schooling**	
Federal	40 (62.5)	English	872 (94.8)
Punjab	24 (37.5)	Urdu	48 (5.2)
Schooling Medium		**Sector of University**	
English	59 (92.2)	Public	207 (22.5)
Urdu	5 (7.8)	Private	713 (77.5)
Teaching Experience		**Parents Income Status**	
less than 1 year	13 (20.2)	Less Than 30,000	68 (7.4)

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1-5years	32 (50)	30,000-50,000	177 (19.2)
6-10 years	15 (23.5)	50,000-70,000	230 (25.0)
10-15 or above	4 (6.3)	70,000-100000	248 (27.0)
		100000 And Above	197 (21.4)
Employment Status			
Visiting Faculty	3(4.7)		
Permanent	61(95.3)		
Sector of university			
Public	15(23.4)		
Private	49(76.6)		
Income Status			
Less Than 3000	17 (26.6)		
30000-50000	18 (28)		
50000-70000	13 (20.3)		
70000-100000	12 (18.8)		
100000 And Above	4 (6.3)		

The most common learning Style among faculty members was reflector (17.65±1.89) followed by pragmatist (16.60±1.89), theorist (15.64±1.98) and activist (11.82±3.41).On the other hand, the most common learning Style among students was reflector (15.71±1.98) followed by pragmatist (15.30±2.61), theorist (14.68±2.55) and activist (12.85±3.11).Description is given in (Table 3). Out of 64 respondents, males had very strong preference for reflector and theorist styles with mean score of (18.03±1.80) and (16±1.92) respectively while females had strong preference for all learning styles. The results showed that respondents lying between 35-55 years were theorist learners (16.04±1.73) and (16.50±0.70). The faculty members with Pharm. D had very strong preference for reflector learning style (18.0±1.22). On the other hand, faculty members teaching 1st professional year had reflector learning style (13.50±3.07). Faculty members from Urdu medium schooling system were theorist and pragmatist learners with mean score of (16.20±2.28) and (17.40±3.20). Faculty members teaching in public as well as private institutes showed strong preference for reflector style (17.48±1.96). Significant association (p≥ 0.05) for pragmatic style with reference to marital status and reflector style and city was observed. While no significant association (p≥0.05) was observed for different learning styles and different demographic characteristics (Table 4).

Table 3: Preference of Learning Styles among Pharmacy Faculty members and Students.

	Activist		Reflector		Theorist		Pragmatist	
	Faculty	Student	Faculty	Student	Faculty	Student	Faculty	Student
Mean	11.82	12.85	17.65	15.71	15.64	14.68	16.6	15.3
Median	12	13	18	16	16	15	16	16
Std. Deviation	3.41	3.11	1.89	2.79	1.98	2.55	1.89	2.61

Table 4: learning styles of Pharmacy Faculty according to Different Demographic Characteristics.

Indicator	Activist	P value	Reflector	P value	Theorist	P value	Pragmatist	P value
Gender								
Male	11.93(3.15)	0.43	18.03(1.80)	0.08	16.00(1.92)	0.107	16.72(1.94)	0.35
Female	11.47(3.65)		17.34(1.93)		15.34(2.01)		16.51(1.88)	
Age								
25-35	11.97(3.81)		15.39(2.23)		15.39(2.23)		16.53(1.98)	
35-45	11.57(2.71	0.345	16.04(1.43)	0.699	16.04(1.73)	0.099	16.76(1.84)	0.231
45-55	11.50(0.70)		17.00(1.41)		16.50(0.70)		16.50(0.70)	
55-60 above								
Qualification								
Pharm D	11.20(3.70)		18.0(1.22)		14.2(2.16)		15.80(2.16)	

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MPhil	11.58(3.81)	0.242	17.35(1.99)	0.212	15.94(1.96)	0.365	16.70(2.06)	0.321
PhD	12.28(2.80)		18.0(1.84)		15.52(1.91)		16.64(1.62)	
Marital status								
Single	11.33(3.71)		17.33(2.05)		15.48(2.13)		16.07(1.97)	
married	12.18(3.17)	0.167	17.89(1.76)	0.311	15.75(1.89)	0.231	17.00(1.76)	0.03
Teaching prof year								
1st year	11.84(4.21)		18.30(1.25)		15.46(2.33)		16.53(2.33)	
2nd year	13.50(3.07)	0.116	17.00(2.32)	0.211	15.75(2.12)	0.311	17.00(1.69)	0.334
3rd year	11.66(2.23)		18.77(1.39)		16.55(1.23)		17.11(1.76)	
4th year	12.53(3.82)		17.38(2.06)		16.23(2.12)		17.38(1.60)	
5th year	10.50(4.30)		17.12(2.41)		14.50(2.07)		14.87(1.55)	
More than one teaching prof year	11.00(2.16)		17.23(1.73)		15.23(1.58)		16.38(1.66)	
City of residence								
Federal	11.45(3.22)	0.129	17.27(1.73)	0.023	15.52(1.86)	0.334	16.35(1.96)	0.093
Punjab	12.45(3.68)		18.29(2.01)		15.83(2.20)		17.04(1.73)	
Faculty's medium of schooling								
English	11.81(3.33)		17.67(1.88)		15.62(1.98)		16.58(1.75)	
Urdu	12.80(4.43)	0.427	17.20(2.28)	0.533	16.20(2.28)	0.456	17.40(3.20)	0.539
Teaching experience								
>1	11.90(3.77)	0.235	17.07(1.84	0.285	15.38(2.39)	0.425	16.69(1.88)	0.219
5-Jan	11.06(2.85)		18.40(1.60)		15.75(1.98)		16.90(2.11)	
10-Jun	12.25(0.95)		16.46(1.95)		15.66(1.91)		15.80(1.37)	
10-15 and Above	12.00(4.58)		18.00(1.63)		15.50(1.29)		17.00(1.41)	
Employment status								
Visiting	11.81(3.39)		17.66(1.52)		14.33(3.21)		15.33(2.51)	
Permanent	11.71(2.30)	0.428	17.65(1.92)	0.584	15.70(1.92)	0.156	16.67(1.86)	0.456
Sector of university								
Public	11.93(3.67)	0.275	18.14(1.61)	0.361	15.35(1.44)	0.482	17.00(1.66)	0.06
Private	11.94(3.91)		17.48(1.96)		15.75(2.12)		16.55(1.94)	
Income Status								
<30,000								
30,000-50,000	12.38(3.66)		17.41(1.80)		15.23(2.19)		16.17(1.74)	
50,000-70,000	11.69(3.54)	0.247	17.66(2)	0.348	15.94(2.28)	0.436	17.27(2.10)	0.532
70,000-1,00,000	11.69(3.54)		18.15(1.46)		16.07(1.44)		16.76(1.64)	
>10,00,000	11.00(2.59)		17.25(2.41)		15.08(1.67)		16.00(2.17)	
	11.75(2.62)		18.25(1.70)		16.25(2.21)		16.75(0.95)	

Chi square test ($p \geq 0.05$)

Out of 920 respondents, all learning styles were preferred by both males and females. The results showed that respondents in age group of 20-22 years were more activist (13±3.01).Students of 3rd professional year had very strong preference for activist (13.20±2.99).Students with cGPA less than 2 had moderate preference for reflector (14.5±44.4) and theorist learning (13.33±3.05).The respondents belonging to Azad Jammu Kashmir had very strong preference theorist style (16±2.12) while Students from Sindh province had moderate preference for pragmatist style of learning (14.66±1.52). No significant association ($p \geq 0.05$) was observed for different learning styles and different demographic characteristics (Table 5).

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Table 5: Learning styles of Pharmacy Students according to Different Demographic Characteristics.

Indicator	Activist	P value	Reflector	P value	Theorist	P value	Pragmatist	P value
Gender								
Male	12.92(3.00)		15.57(2.87)		14.9(2.59)		15.47(2.58)	
Female	12.82(3.16)	0.659	15.77(2.75)	0.303	14.62(2.53)	0.349	15.21(2.63)	0.606
Age								
17-19	12.51(3.34)		15.99(2.62)		14.43(2.69)		15.39(2.56)	
20-22	13.00(3.01)	0.28	15.63(2.80)	0.132	14.73(2.54)		15.32(2.65)	0.212
23-25	12.75(3.13)		15.57(3.04)		14.85(2.35)		15.04(2.53)	
Meduim of schooling								
English	12.84(3.11)		15.68(2.81)	0.651	14.67(2.55)	0.762	15.29(2.61)	0.362
Urdu	13.18(3.09)		16.20(2.56)		14.72(2.59)		15.52(2.65)	
Prof year								
1st year	12.43(3.27)		16.10(2.47)		14.68(2.56)		15.36(2.46)	
2nd year	12.79(3.03)	0.811	15.46(2.64)	0.366	14.26(2.59)	0.511	15.11(2.81)	0.276
3rd year	13.20(2.99) 12.98(3.28)		15.61(2.85)		14.75(2.61)		15.51(2.62)	
4th year	12.79(2.87)		15.79(3.16)		14.99(2.45)		15.27(2.66)	
5th year			15.58(2.71)		14.71(2.48)		15.20(2.40)	
City of residence								
Federal	12.76(3.15)		15.70(2.83)		14.73(2.54)		15.24(2.58)	
Punjab	12.95(3.11)	0.211	15.74(2.77)	0.544	14.66(2.56)	0.289	15.36(2.64)	0.99
Sindh	12.66(3.78)		16.66(1.52)		14.66(1.52)		15.66(1.52)	
KPK	12.71(2.67)		14.57(2.82)		13.42(2.82)		14.71(2.72)	
AJK	11.60(1.81)		15.20(3.11)		16.00(2.12)		16.20(2.86)	
CGPA								
Less than 2.0	13.33(2.80)		14.50(4.44)		13.33(3.05)		15.83(2.65)	
2.0-2.5	12.70(3.10)	0.361	15.62(2.48)	0.243	14.62(2.50)	0.771	15.12(2.62)	0.881
2.5-3.0	12.84(3.11)		15.63(2.89)		14.63(2.54)		15.42(2.74)	
3.0-3.5	13.15(3.10)		15.67(2.75)		14.77(2.49)		15.34(2.63)	
3.5-4.0	12.53(3.12)		15.92(2.78)		14.68(2.63)		15.17(2.47)	
Sector of university								
Public	12.82(2.75)	0.234	15.82(2.62)	0.545	14.28(2.30)	0.884	15.47(2.46)	0.651
Private	12.86(3.12)		15.6(2.85)		14.64(2.62)		15.42(2.65)	

Chi square test ($p \geq 0.05$)

Discussion

Every individual is unique in way of understanding and conceiving information and knowledge therefore, exposure to different teaching and learning methods can enhance his/her learning preferences. Every individual has a certain degree of preference for each type of learning style and majority of them have dominance in one or more styles of learning. In particular, learning styles are known as activist, reflector, theorist and pragmatist. These styles altogether form Kolb's learning style inventory. Activist learners are good at creating ideas as they like dramatic changes and excitement and enjoys the limelight [17]. They have dominant learning abilities of doing and feeling and they are interested in doing things and to be part of new experiences. The results of the present study reported that all students had preference for activist learning style. They agreed that they adapt well in changing circumstances immediately and believe in doing things. Activist learning style was very dominant in students in age group of 20-22 years. The males and females both were found to have this learning preference. Furthermore, students of 3rd professional year had very strong preference for activist way of learning. Students with less c GPA were more activist, on the other hand, respondents with 3-3.5 CGPA also had strong preference for this way of learning. Similar finding were found in study conducted in Australia and it showed that

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undergraduate paramedic students also had a preference for accommodator (activist) style of learning [18].

The results of Faculty members showed that every individual was unique in their ways of learning. The male and female both showed strong preferences for activist learning styles. They agreed that they act on considering all the possible outcomes, they seek new experiences actively, enjoy the drama and excitement of a crisis situation and they were more open about their feelings. They accept the challenges of tackling something new in life. Furthermore, the teachers had very strong preference for activist style who were teaching students of 2nd professional year and this style became moderate in students of final professional year. Moreover, activist way of learning was found in faculty of both private and public universities. A reflector individual is the one who stands back and observe, thinks before acting on any issue [17]. They have learning abilities of feeling and watching. They have good imagination, identify problems and use brainstorming to solve them. The current study highlighted that pharmacy students showed strong preference for reflector learning style. They agreed that they like work when they had enough time for preparation, they take care before doing action, reach decision and keep in mind other alternatives. Students of all semesters showed preference for this style of learning and agreed they don't jump to conclusions too quickly. Regarding the academic grades, respondents having low cGPA had moderate preference. In contrary, to these findings, students of KPK showed low preference for this style. Similar findings were reported in study conducted in United Kingdom that showed that dominant learning style of students was reflector [17].

Moreover, the results of the present study reported that reflector learning styles was found highest among all the faculty members, however, other styles were also present. Most of the faculty members especially males had high preference for this style. Reflector style was more preferred among faculty members who had Pharm. D and PhD degree. Moreover, faculty members teaching 1st and 3rd professional year showed more preference for reflector way of teaching. A study conducted in Iran reported similar results that the most dominant learning style among faculty members was reflector while their least preferred learning style was activist [19]. Theorist have strong abilities of thinking and watching. They investigate basic assumptions and like logical concepts [17]. The present study highlighted that students were theorist learners and had high preference for this style. Students in age group of 17-25 years strongly follow this style of learning. Students of AJK were theorist learners while KPK students moderately follow this style. Results from a study conducted in Chile reported that most fresh students enrolled in university showed theorist learning preference [19]. The teaching faculty with theorist learning style agreed that they best deal with analytical people than with irrational people, they like to relate actions with standard beliefs, and they tend to be perfectionist. The current findings showed that that male teacher had very high preference for theorist style than females. While senior faculty members also had more preference towards this style. Similar study of learning style was conducted in USA and it reported that assimilator (Theorist) was most preferred learning preference among faculty and there was no association between age, gender or education status and learning styles [20].

Pragmatist learners enjoy techniques with practical value and like learning from demonstration and implementation [20]. They are relatively unemotional, preferring to deal with practical things rather than people. The results of this study reported that Pharmacy students also showed strong preference for this style. They agreed that they say directly about their thinking and are more attracted to flow charts, contingency plans. Similarly, a study conducted in Turkey reported that students were pragmatist learners and curriculum models and other independent variable had no significant effect on change in learning styles with time [21]. The faculty members also had high preference for this style of learning. The married teachers very pragmatist learners. Regarding the teaching, the teachers of 2nd to 4th professional years had high preference for pragmatist learning while coming to 5th professional year this trend declined. Urdu medium respondents strongly preferred pragmatist style. As the teaching experience increased pragmatist learning style also dominant. Income status between Rs 30,000 to 50,000 had high preference for pragmatist style. Likewise, a study on faculty members learning styles in Hong Kong reported that faculty preferred pragmatist style [22].

Conclusion

The present study concluded students and faculty had different learning preferences, and one and more learning styles might be dominant. Preference for reflector style was found more common among young male faculty members as well as students. However, theorist learning style was found dominant among senior faculty members. Moreover, students with low academic grades also moderately followed theorist style. The pragmatist and activist learning styles were also strongly preferred by both faculty and students. Pharmacy Council of Pakistan should take in consideration all the varying learning styles of pharmacy students and teachers and should plan, implement and evaluate pharmacy curriculum accordingly. Flexible curriculum must be designed to address a variety of learning styles. Appropriate continuous professional training program for faculty members must be designed for improving teaching methodology keeping in view different learning styles. Moreover, monitoring mechanism of faculty assessment of student's achievements should be devised.

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