Applying Andragogy in Kolkata Classrooms – Student Opinions Vs. System Issues

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Abstract: How college and university students, who are at the budding stages of their adulthood be taught? Should it be somewhat different from 'pedagogy' – a term whose literal meaning implies 'leading a child'? Can Malcolm Knowles' theory or model of andragogy – the alternate theory for adult learners - offer some insights? Scholars across the world are debating and carrying out studies to find answer to these questions by various ways. The results when out, will someday bring about a discernible change in the way we approach higher education. However, the extent to which andragogical principles can serve the purpose should not be left to be decided by a teacher when he meets students in the first class. This study done in classrooms of colleges and universities in and around Kolkata tries to ascertain this difficulty level. A modified version of Wolfson's (1998) 'Andragogy Difficulty Index' is used on 183 students sampled incidentally. Findings reveal that from the students' perspectives, incorporating these in our classrooms will be a welcome change, because no matter whatever the system espouses, the mindset and practices of these students are quite aligned to andragogy.

Keywords: Andragogy, Pedagogy, Higher Education, Teacher Education, Methodology.

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I. INTRODUCTION

India is not only the world's most populous country, a significant portion of its population being young adults aged 15-30 years. By 2030, one in every four graduates globally is projected to emerge from an Indian educational institution (Service, S. N., 2018) which underscores the immense potential of Indian higher education sector. The demographic dividend needs to be harnesses at any cost and quality higher education will be a key determinant for that. At this stage, college and university students are navigating the budding stages of their adulthood, so it becomes imperative to pose the question whether teaching methods in higher education are aligned with their evolving needs and characteristics.

How do we address teaching methods in India? Traditionally, the term "pedagogy" has been used universally though its literal meaning being "the art of leading a child" emphasizing a teacher-centered approach relying on passivity of the learner. However should we differ from it in the context of higher education? Malcolm Knowles introduced the analogous theory of "andragogy," recognizing the maturity and autonomy of adult learners. Students in higher education are beginning to mature as adults, seek education that aligns with their life experiences, motivations, and goals.

Even if it is agreed that use of andragogy in the Indian educational landscape is not only relevant but also essential, its implementation needs a paradigm shift. The most crucial change has to occur with teachers' approaches and mindsets which may be achieved with suitable pre-service and in-service teacher education programs but just teachers willing to implement andragogy inn their classes cannot solely do so without the stage being properly set. Many things need to be ensured much before a teacher meets his students in the classroom. Are students so long exposed to strict pedagogy willing enough to be self-directed or are the systemic components properly equipped to place the learner at the center of all, a must to execute andragogy? Answers to these questions are needed in advance to ensuring a cohesive and well-thought-out plan to bring about differentiated teaching approach catering to learners' needs. This study tries to ascertain a beforehand estimate of the difficulty to implement Andragogy (in classrooms of colleges and universities in and around Kolkata).

➢ *Earlier Studies - Andragogy in Higher Education:*
Many researchers around the world have written about and experimented with andragogy in their institutions. Heidi J. C. Ellis (2002) did an experimental study of using andragogy on adult students aged between 20-50 years in his engineering course and found that the experiment was successful because the students reported that the self-directed independent approach helped them absorb more material in a shorter period of time. It was a two semester long experimental study on 58 students of Web Technology in

Department of Engineering and Technology, Rensselaer at Hartford, Connecticut, USA. That Andragogy improves student learning and satisfaction is a fact that has been corroborated by other studies as well though their approaches were different. Nursing students also have similar perspective as revealed by the study of Jinks Annette et al (2006). This was a descriptive study on 76 principals/ HOIs of senior nursing colleges in England. They have inferred this implied andragogical orientation which indirectly gets expressed by the self-centered preferences of these students, seen from the point of view of institutional heads. James Painbridge and Marie Perretti (2013) conducted a non-experimental quantitative study using self-reported survey on 208 students of ABET accredited Capstone design courses in USA to find the students' orientation based on Knowles' assumptions. They found good results with a high score (median score was 20 on a 25 point scale with minimum score 13 for two participants and maximum score 25 going to 20 participants). Students' preference for andragogy is confirmed from the negative side by Hashim R.'s (2010) cross-sectional survey study on 169 e-PJJ students at Institute of Educational Development in Universiti Teknologi MARA, Malaysia. Here, absence of andragogy is blamed for mediocre student engagement leading to their poor CGPAs in their 2010 paper "Measuring Andragogy – A case of e-PJJ students at InED, UITM" where they have recommended Andragogical practices to improve the situation.

In the world of academic courses, it is also seen that teachers of English language in China use andragogy to some extent, but still rely on traditional methods such as rote learning and memorization (Wang & Storey, 2015). 148 teachers of English who teach in the schools of English studies at the eight universities of foreign languages were involved in the survey. Holmes (1980) used two instruments to measure the educational orientation and the interpersonal behavior of 167 adult educators from Auburn University and Alabama Cooperative Extension. The results showed that there were significant differences between the andragogical and pedagogical groups of teachers in their beliefs and attitudes about adult education, and that some interpersonal behaviors were related to their orientations. Yoshimoto, Inenaga & Yamada (2007) examines how universities in Germany, the UK and Japan offer different pedagogical approaches for young and mature students, and how they produce relevant outcomes. They found that andragogical resources, provisions and orientations are more relevant for mature students while some pedagogical elements also prevail. Victor Wang (2004) from California State University, USA investigated the instructional preferences of full time students of a course called 'Principles of Adult Education' and found that in predominant number of cases they preferred andragogical approaches. Thus it is quite obvious that students in higher education, would like to enjoy a loosely controlled teaching approach whereby they can exercise a greater deal of autonomy as advocated by Mallcom Knowles but the question remains if the system and its different organs allow for the same.

➢ *Andragogy – the Principles:*

Starting with ancient Greek philosophers like Socrates and Aristotle who emphasized dialogue and critical thinking to thinkers like John Locke and Jean-Jacques Rousseau during the Renaissance and Enlightenment periods - the groundwork for modern approach to teaching emphasizing individual autonomy and the importance of personal experience had been laid down for quite long. Meanwhile psychological schools of behaviorism, humanism, also acknowledged the unique characteristics and motivations of adult learners. Malcolm Knowles introduced the concept of andragogy in the 1970s, highlighting differences from pedagogy like mature learners' self-concept, life experiences and prior knowledge and motivation to learn in the relevance to their goals. The six key Principles of Andragogy are (Knowles, 2005):

- Adults *need to know* what benefits they would gain from enrolling in a course and would not blindly opt for a course due to others' persuasions that do not help their lives in any way.
- Adults have a strong *self concept* that prevents them from accepting anything just because it is coming from someone, so called higher in the hierarchy.
- Adults in general, have a *vast reservoir of experience* that can be used as a learning resource for new lessons. This, if done, validates their experiences and helps them observe the new content easily and effectively.
- Adult learners need not be aroused suitably for a lesson to be taught; rather their *readiness to learn* is directly connected to the scope of application of the lesson in their daily lives.
- They do not prefer to learn subjects first and later apply them to life problems. Their *orientation to learning is life-centered* or problem-centered as opposed to subject-centered.
- Adults are not driven by external motivators like ranks, trophies and praises that much, rather *internal motivators* like improvement of life quality are more potent for them.

➢ *Development of Andragogy Difficulty Index:*

Wolfson(1998) tried to quantify the complexity involved in implementing andragogy principles within a given course. Designing of the tool for his purpose known as the Difficulty Index was a noteworthy innovation in the application of andragogy. It serves as a measure of "the extent of planning and procedure one must develop in order to facilitate learning according to Knowles' principles" (Wolfson, 1998). The key focus of the Difficulty Index is to assess the level of effort required to incorporate andragogical approaches in higher education settings. In essence, it provides a systematic way to evaluate the challenges and workload associated with aligning the teaching strategies of educators with Knowles' andragogical principles. A high total score indicates a greater amount of work needed to successfully implement andragogy, and courses with lower scores suggest a comparatively smoother integration of these principles.

As expressed in his article, Wolfson's hope was to inspire readers to innovate and embrace andragogy in their classrooms. It did have a notable impact on subsequent educational research as it provided a structured means to evaluate a rather complex outcome. Scholars like Michael L. Birzer (2004) and Shimshon Neikrug (2004) incorporated Wolfson's Difficulty Index into their own studies thus contributing to the ongoing conversation about tailoring teaching methods to the unique characteristics of learners in higher education. This tool is a valuable resource to gauge the feasibility and practicality of applying andragogy in various academic disciplines and the researchers found it to be most useful for their purpose in this study.

II. COMPONENTS OF ANDRAGOGY DIFFICULTY INDEX:

To adapt Wolfson's tool to the specific nuances of the educational landscape in India, it was necessary to modify it to make the items relevant to the Indian setting. Therefore certain variables such as student strength for each teaching unit, class durations were customized and middle options were introduced for each question. For example, in the original tool, student strength ranged from 8 to 15 and class duration ranged from 1 to 5 hours – numbers not at all attuned to the Indian context.

The tool takes a holistic approach to assessing the feasibility and challenges of implementing andragogy and has dual focus - the students' perspective and the systemic provisions. From the students' side, it tries to understand what resonates with them so that teaching strategies may foster engagement and facilitate effective learning experiences. The items are:

Why did you enroll for this course?	How do you study for this course?	What learning resources do you need to consult apart from classroom teaching (for each paper/topic)?
- Personal Interest - Getting jobs - Nothing particular - Sent by parents	- Self-study from unspecified sources open discussion on students' problems - Study material supplied and doubt-clearing sessions on assignments - Mix of lecture and feedback on assignments - Rigorous lecturing	- Collect and integrate everything from various sources (books, journals, library, internet etc.) - Multiple books to be suitably integrated - Single text-book to be supplemented by teacher inputs - Single supplied class note

On the systemic side, the tool considers learning environment and logistical elements because adjusting class durations and frequencies can enhance or impede the implementation of self-directed learning and collaborative activities. The items are:

What is the average class size (for each teaching unit)	What is the average span of class hour in time schedule (for theoretical)?	What is the average span of class hour in time schedule (for practical)?
- 10-30 - 31-50 - 51-80 - More than 80	- More than 1.5 hours - 1 hour to 1.5 hours - 45 minutes to 1 hour - Less than 45 minutes	- More than 2 hours - 1.5 hour to 2 hours - 1 hour to 1.5 hours - Less than 1 hour

To add granularity to the assessment middle options were inserted for each question the four options arranged in ascending order of difficulty. Preliminary data about the students and their institutions are collected to provide a contextual foundation for analysis. Three experts provided feedback on content validity which were all positive and their suggestions for slight changes were taken into account while finalizing the above items.

➢ *The Sample Profile:*

The questionnaire was employed on 108 university and 75 college students by the researchers. They were sourced from the undergraduate and post graduate students pursuing both academic and professional courses in institutions in and around Kolkata. The sample was selected incidentally from the persons willing to participate in the survey when the researchers visited their respective institutions. Thus in total responses from 183 students were analysed non-parametrically to arrive at conclusions. The composition of the sample with respect to gender, area of institution, nature of administration of institution and nature of course are shown in the following pie-charts.
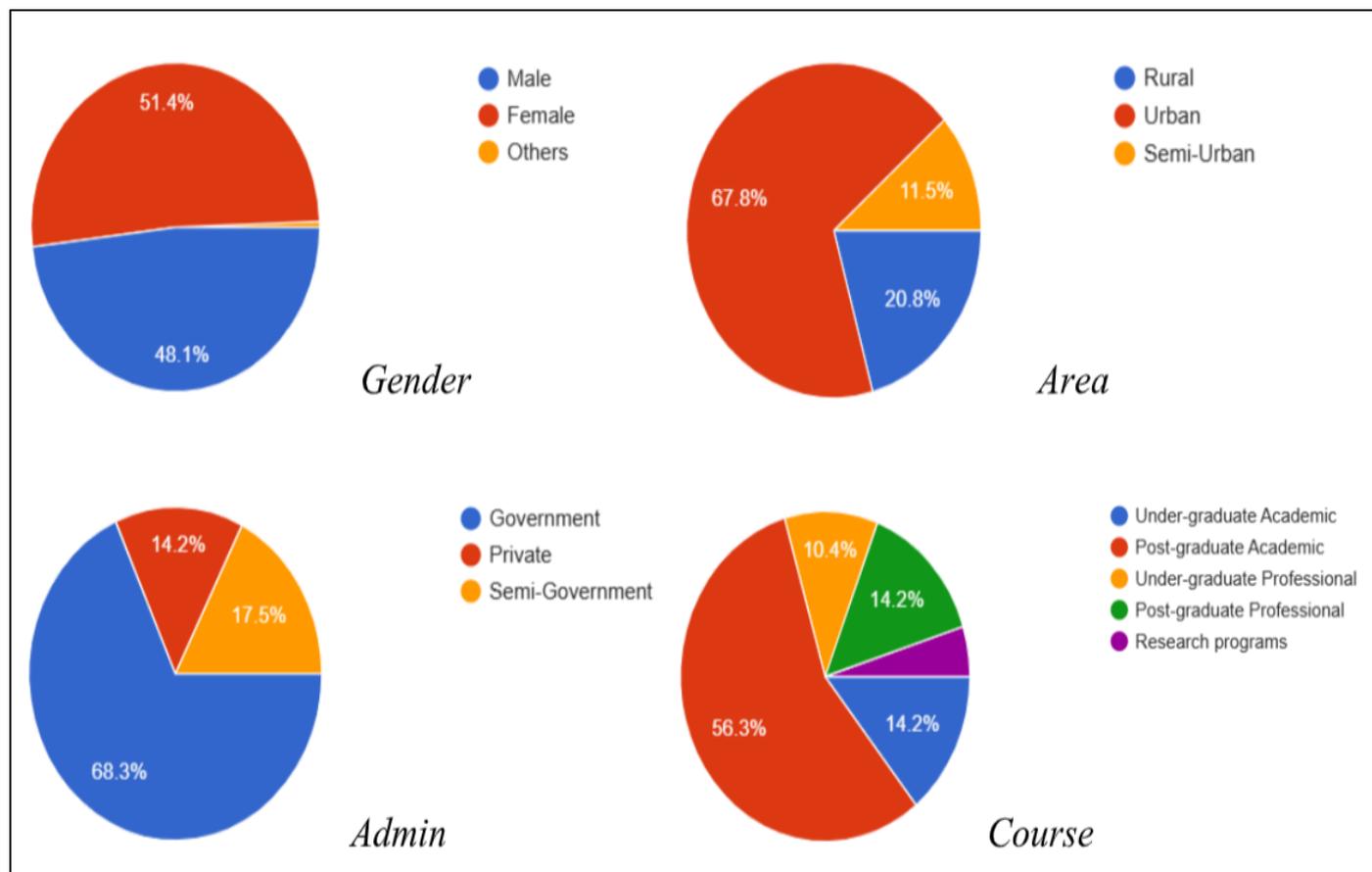

Fig 1 Gender, Area, Admin & Course

It is seen that both genders have equally contributed to the data with most students pursuing PG academic courses while those pursuing UG and PG professional courses and UG academic courses were also considerable. Even 9 research students also gave their data. The institutions were mostly government run urban institutes though there were appreciable contributions from students from suburbs and villages and some private and semi-government institutions were also involved. In all, the sample presents a collection of students having a great degree of heterogeneity having representation from all types and higher education courses being run in and around Kolkata.

➢ *Findings – Student Practice:*

From the responses collected on the three items pertaining to students' practices, a clear and positive inclination of students towards andragogy is revealed. It is seen that most students (58.5%) pursue their courses for personal interest and the next bigger share (32.8%) pursue their studies to get jobs and almost no students simply pursue it because of their parents' pressure. About their processes it is seen that an appreciable number of students (19.7%) follow the most difficult option of self-study, resourcing materials themselves with approaching instructors only for problems, though the majority rely on teachers' lecture supplemented by teachers' feedback on assignments. When it comes to selecting learning resources, a whopping majority (76%) adopt the most andragogical option of collecting and integrating everyting from various sources and this share of students progressively decline as we move on to the lesser andragogical options with a negligible number of students just relying on teachers' notes. The following pie-charts illustrate the data found.
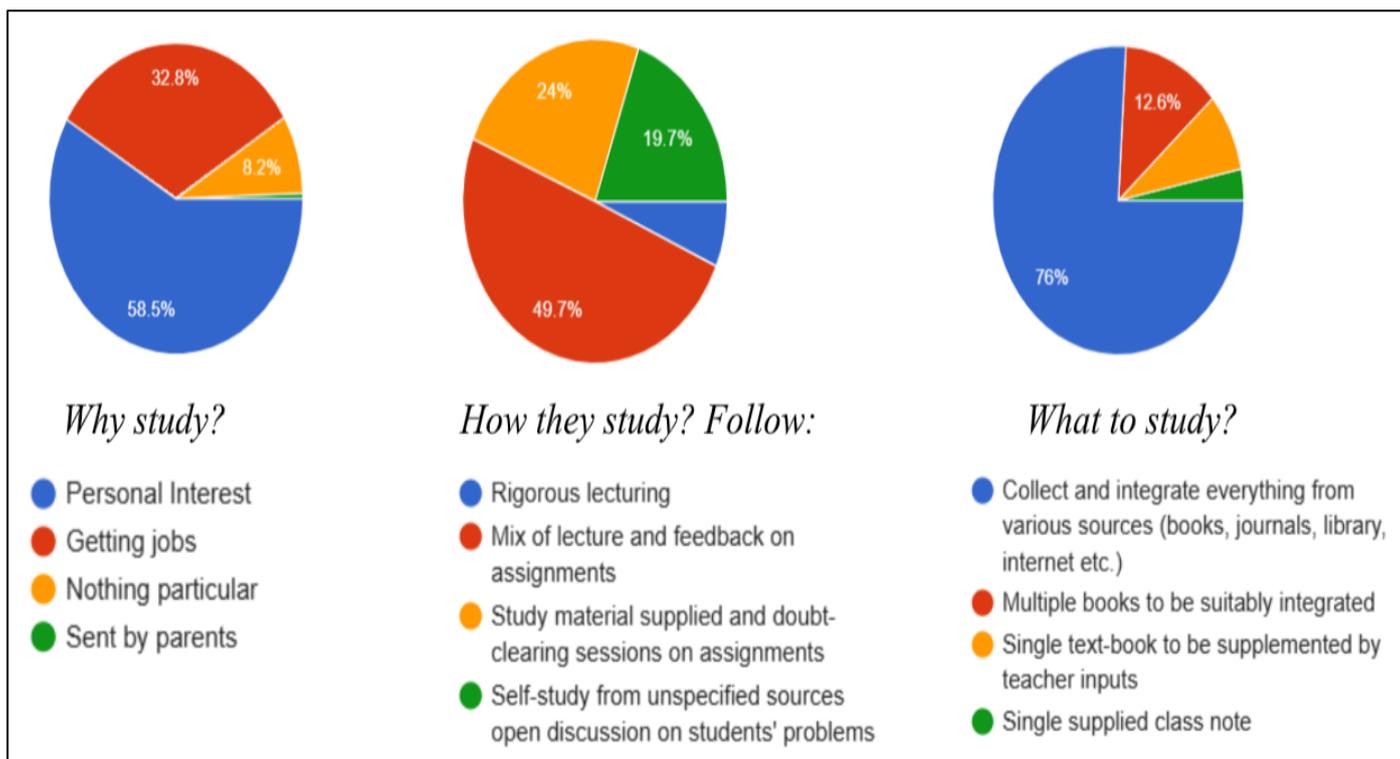
Fig 2 Why study? How they study? Follow: What to study?

Statistical measures provide insights indicate a consistent and high level of preference for andragogical principles among the student population. The data presented falls in the range of 4 to 12 with central tendency upholding the above outcomes with a mean of 9.67 and both the median and mode aligning at 10. The concurrence of the median and mode indicate that this preference is not skewed by extreme values but is consistently strong across the dataset. The histogram exhibits a prominent peak at the value of 10, suggesting a general tendency towards higher scores in favor of andragogy. The clustering of values around the upper end of the spectrum (10) in a range spanning from 4 to 12, underscores a collective preference for andragogical approaches among students. This strong endorsement of andragogy by students implies a positive reception to learner-centered approaches, self-directed learning, and the acknowledgment of their autonomy in the educational process. This clear inclination of students signifies a promising foundation for educators and institutions aiming to implement andragogy.
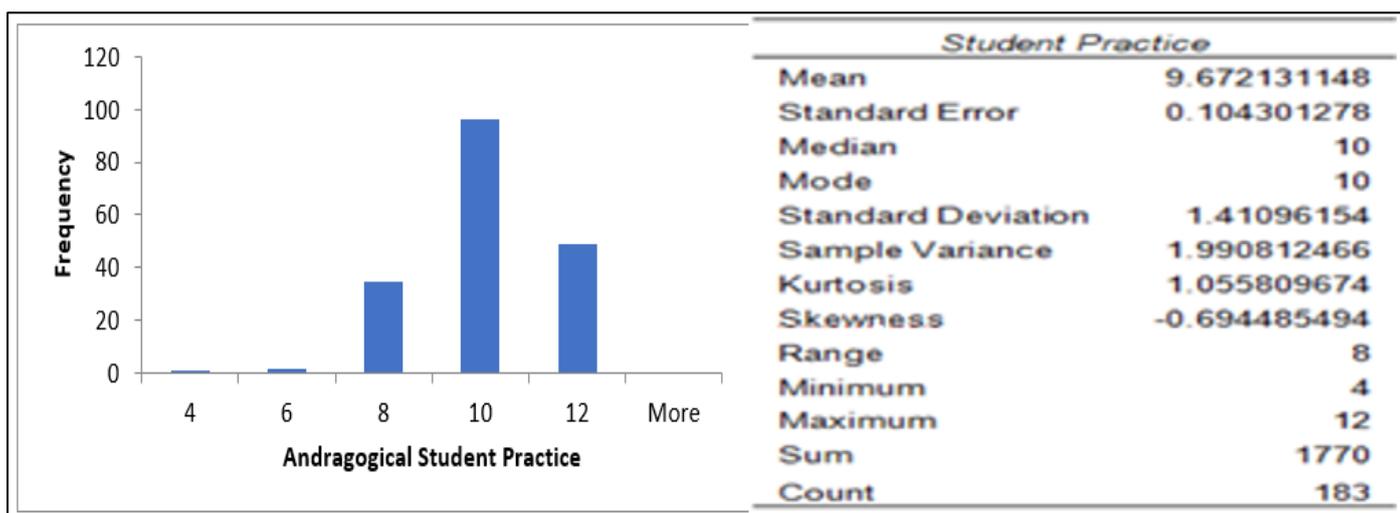

Student Practice	
Mean	9.672131148
Standard Error	0.104301278
Median	10
Mode	10
Standard Deviation	1.41096154
Sample Variance	1.990812466
Kurtosis	1.055809674
Skewness	-0.694485494
Range	8
Minimum	4
Maximum	12
Sum	1770
Count	183

Fig 3 Andragogical Student Practice & Student Practice

➤ *Findings – Systemic Providence:*

The data from systemic providences suggests a moderate, not so strong stance regarding andragogy. While the share of responses (lesser the strength, more it is andragogical) showing student strength per teaching unit 10-30 (27.3%) is not lesser than the worst option more than 80 (21.3%) the substantial shares of the lesser favourable middle options (51.3%) clubbed with the above make the situation

less favourable for andragogy. For class spans in theoretical classes only very less amount of classes (14.2%) follow the best andragogical option of long class durations of more than 1.5 hours, with most classes (56.3%) being restricted to less than one hour classes that allow very less time to execute the andragogical model fully. The situation slightly improves for

practical classes where students get hands-on skill practices but even there the vast majority (44.8%) having classes less than 1.5 hours and even an appreciable amount (24%)getting only less than one hour to adopt practical skills – totally insufficient considering the freedom and choice they should have been allowed in the process according to andragogy.
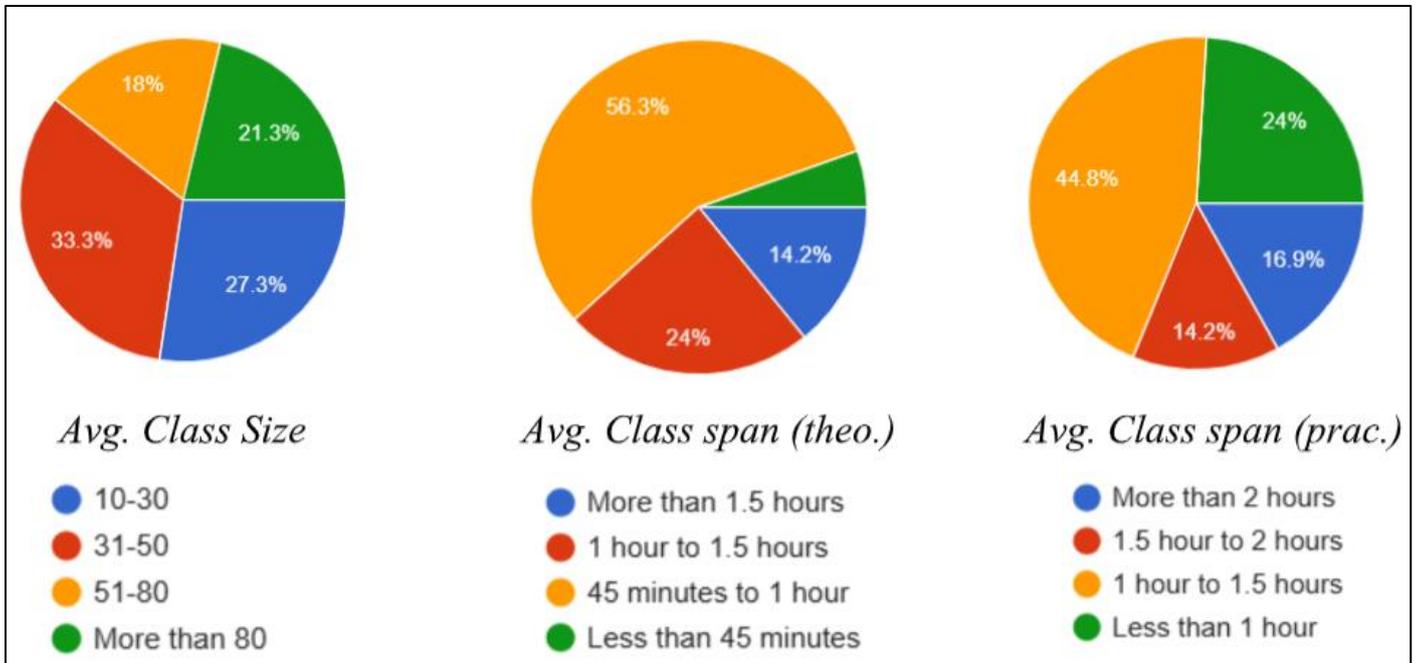

Fig 4 Avg. Class Size Avg. Class span (Theo) Avg. Class Span (Prac)

Statistical treatment of the data also testify to the lukewarm status of structural elements when it comes to implementing andragogy in higher education. A mean of 7.37 (students'was 9.67), with both the median and mode aligning at 7 (students' was 10) within the range of 3 to 12, suggests the moderate nature of systemic provisions as mentioned above. The central tendency around the moderate value shows consistency with coincidence of median and mode. The histogram, also exhibit a noticeable peak around the

value of 7, reinforcing the statistical findings. This mediocre level of things suggests that, while students exhibit a strong inclination toward andragogy in terms of their own learning preferences, the systemic provisions, such as class durations, frequency, and other structural aspects, don't quite match up. This suggests that there is room for improvement or refinement in these aspects that support the effective implementation of andragogy.
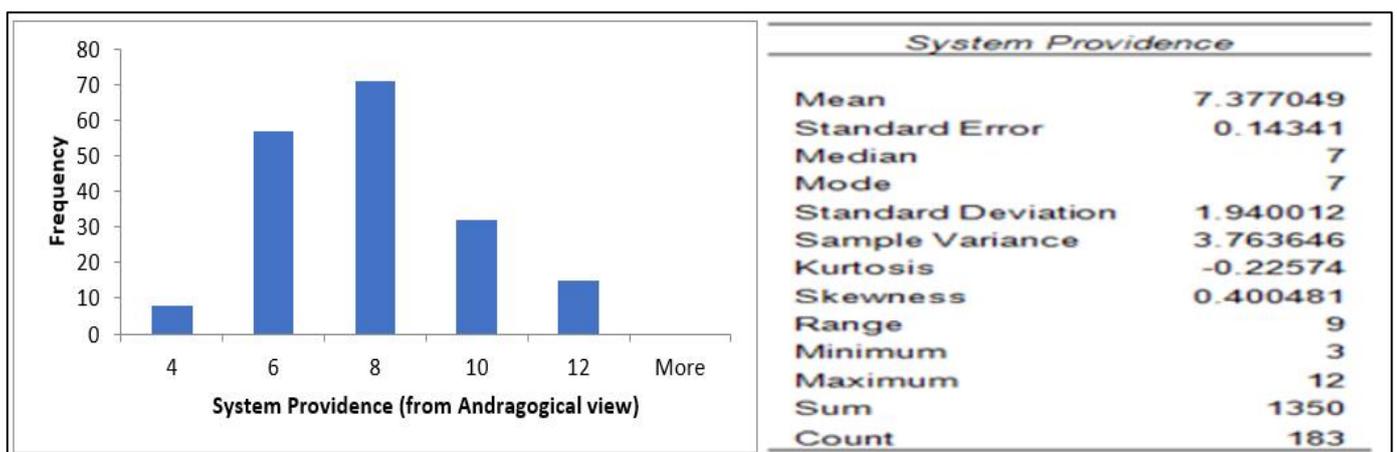

Fig 5 System Providence (from Andragogical view) & System Providence

➤ *Associations: Student Practice with Gender, Level (Age) of Students:*
Two Chi-square tests are done to find association between andragogical student practices and student variables like gender and level of study which indirectly signifies their age.

Table 1 Chi-Square Test (Student Practice* Gender)

Chi-Square Test (*student practice* gender*)			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	9.780[a]	16	.878
Likelihood Ratio	11.207	16	.797
N of Valid Cases	183		
a. 17 cells (63.0%) have expected count less than 5. The minimum expected count is .01.			

The results of the gender test indicate a Pearson Chi-Square value of 9.780 with 16 degrees of freedom with an asymptotic significance level (p-value) of .878. The p-value (0.878) is notably higher than the conventional significance level of .05, indicating that there is no statistically significant association between andragogical student practice and gender.

Table 2 Chi-Square Test (Student Practice* Level)

Chi-Square Test (*student practice* level*)			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	45.725[a]	16	.000
Likelihood Ratio	34.418	16	.005
N of Valid Cases	183		
a. 17 cells (63.0%) have expected count less than 5. The minimum expected count is .05.			

The results for the level of study chi-square test yields a Pearson Chi-Square value of 45.725 with 16 degrees of freedom and an asymptotic significance level (p-value) of .000. The p-value (0.000) is very low (below the conventional significance level of .05), suggesting a statistically significant association between student practice and level. This indicates that there is evidence to suggest that andragogical student practice varies significantly across different levels. This outcome can be further understood in the cross-tabulation table which show that UG students data are clustered towards the left and centre of the row whereas when we move on to the PG students and research students the figures more and more shift towards the right side.

Table 3 Student Practice* Level Cross-Tabulation

Student practice* level Cross-tabulation												
		StuPrac										*Total*
		4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00		
Level	*Post-graduate*	1	0	0	3	18	22	50	26	9		129
	Research	0	0	0	0	0	0	3	1	5		9
	Under-graduate	0	1	1	5	9	9	12	7	1		45
	Total	1	1	1	8	27	31	65	34	15		183

➢ *Associations: Systemic Providences with Type of Course, and Nature of Administration*

Similarly two chi-square tests are also conducted on the systemic providence side one to examine the influence of type of course and another to examine the influence of type of institutions.

Table 4 Chi-Square Test (System Providences*Course Type)

Chi-Square Test (*system providences*course type*)			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	10.687[a]	9	.298
Likelihood Ratio	11.481	9	.244
N of Valid Cases	183		
a. 10 cells (50.0%) have expected count less than 5. The minimum expected count is .49.			

The results indicate a Pearson Chi-Square value of 10.687 with 9 degrees of freedom and an asymptotic significance level (p-value) of .298. The p-value is higher than the conventional significance level of .05, suggesting that there is no statistically significant association between system providences and type of course.

Table 5 Chi-Square Test (System Providences* Type of Admin.)

Chi-Square Test (*system providences* type of admin.*)			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	21.120[a]	18	.273

Likelihood Ratio	26.657	18	.086
N of Valid Cases	183		
a. 18 cells (60.0%) have expected count less than 5. The minimum expected count is .28.			

The results indicate a Pearson Chi-Square value of 21.120 with 18 degrees of freedom and an asymptotic significance level (p-value) of .273. The p-value is higher than the conventional significance level of .05, suggesting that there is no statistically significant association between system providences and the type of administration.

III. CONCLUSION

The study brings to light the contrasting scenario between the students' perspective side and the systemic side of things in matters of tailoring teaching methods to the developmental stages of students. While our students of higher education have a inherent flair for andragogy, there are challenges and limitations in the structural framework within the educational institutions and the system. Thus in terms of Andragogy Difficulty Index (Wolfson, 1998) we can say that adopting andragogical approaches in our higher education is not that difficult from the students' side but the system is not so ready posing a medium level difficulty on the system's side.

The fact that students' preference towards andragogy increases from UG to PG to research level programs shows how inclination towards andragogy increases more and more as learners mature. The analysis of course types and administrative structures, reveals a consistent gap between students' preferences for andragogy and the existing system. No matter the course is academic or professional, or the administration is government, semi-government, or private, the identified lacunae on the system side persist. This suggests that the issues are omni-present and much deep-rooted cutting across diverse courses and administrative setups. For all categories it may be concluded that despite students' readiness for andragogy the institutional infrastructure and support mechanisms are not fully aligned with their preferences and needs. Through this study, attention of all stakeholders is invited to bridge the gap between students' practices and the pervasive systemic provisions with respect to andragogy. For this, curriculum could be made flexible and learner-centered, suitable faculty development programs provided, institutional support enhanced and structural framework of education redesigned to align it better with students' preferences.

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