CHAPTER IV
DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

The study on curriculum management in IB PYP schools in India has adopted a convergent parallel mixed method design to address the research objectives. In line with the mixed-method design, quantitative and qualitative data were collected and analyzed separately and in the same time frame. This chapter presents the data gathered, the quantitative and qualitative analysis results and the integration of results. The analysis is presented in three sections:

1. The first section presents the quantitative analysis of the profile of the participants and analysis of teachers' perception of curriculum management captured in CMTPS; students' perception of teaching-learning and classroom observation schedule,
2. The second section gives a complete account of the qualitative analysis of interviews, focus groups and classroom observation and the profile of respondents
3. The third section presents the procedure of merging results and provides a narrative of how the quantitative and qualitative analysis results converge, diverge or expand the understanding of the research problem. The results are interpreted and presented in this section, addressing each research objective.

4.2 QUANTITATIVE DATA ANALYSIS

A quantitative approach was adopted to capture the perception of teachers on curriculum management in IB PYP using the Curriculum Management Teacher Perception Scale; a student survey captured the perceptions of students on the school and teaching-learning in PYP; classroom observation schedule to capture the teaching-learning process within classrooms. All these tools produced numeric data, and various statistical techniques were utilized to produce results on the significant aspects of curriculum management in PYP schools. Quantitative analysis is presented in three sections: 1) analysis of teachers' perception, 2) analysis of students' perception and 3) analysis of classroom transactions. Each section begins with the demographic description of participants, and then a detailed analysis is presented.

4.2.1 Teachers' Perceptions on Curriculum Management in IB PYP Schools

Teachers' perception of various aspects of curriculum management in IB PYP was captured through Curriculum Management Teacher Perception Scale. This consisted of questions regarding demographic details, qualifications and perceptions on curriculum development,

implementation, evaluation and pedagogical leadership in IB PYP. A total of 250 teachers responded to the questionnaire (n=250).

4.2.1.1 Demographics of Participants

Participants' demographic characteristics are presented in narrative and pie chart format. The demographic information was combined with quantitative results for meaningful interpretation. Information from respondents in the teacher questionnaire was collected based on various parameters. They were about gender, age group, current teaching assignment, years of teaching experience in IB PYP, academic qualification, professional qualification, level of professional development in IB, International academic exposure and IB certificate course. These details are presented in below pie charts.

Gender, Age Group and Teaching Assignment

It was observed from the data that most of the respondents were female (95%), and 54% were in the age group of 30-39 years (Figures 4.1 and 4.2). The respondents came from a reasonably well-represented sample in their assignment in the PYP; data shows a representation from almost all teaching levels from the pedagogical team to early years to grade 6 (Figure 4.3).

Figure 4.1

Gender of Participants

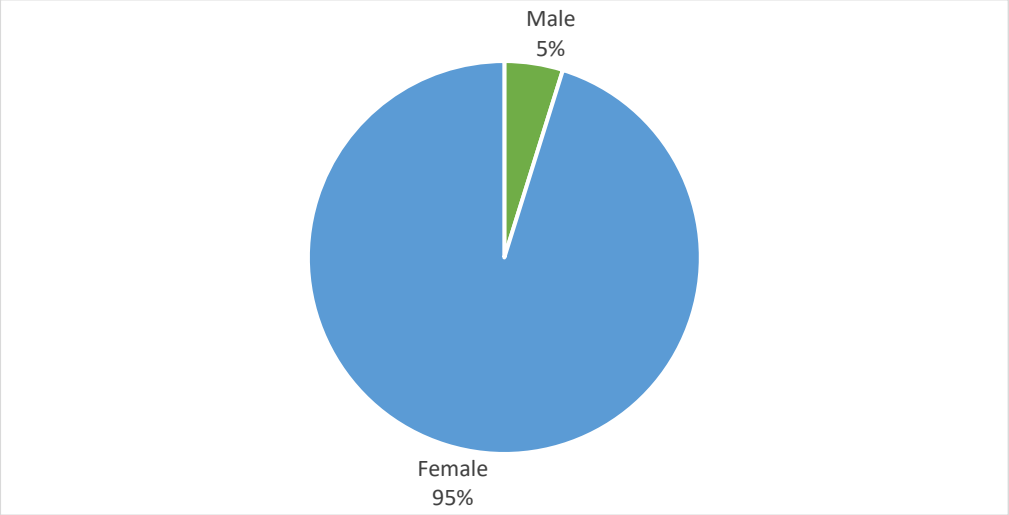


Figure 4.2

Age Group of Participants

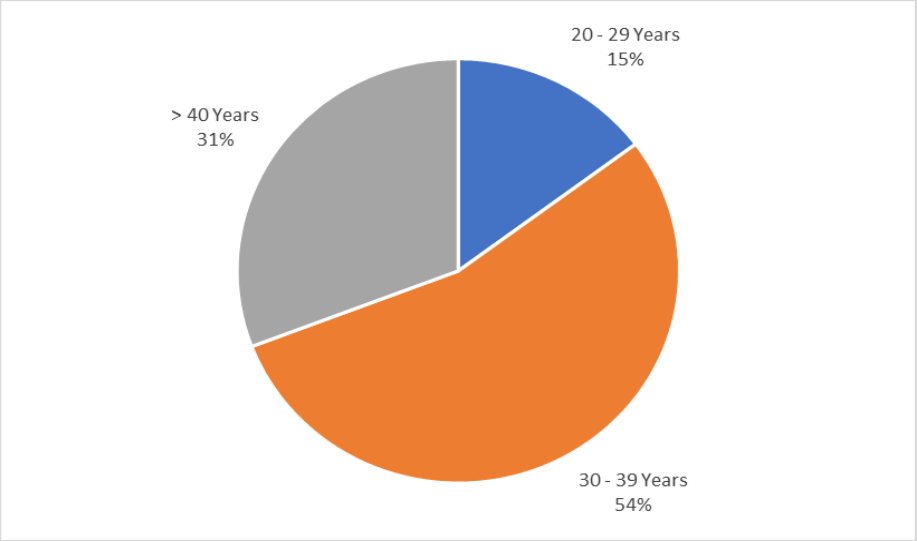
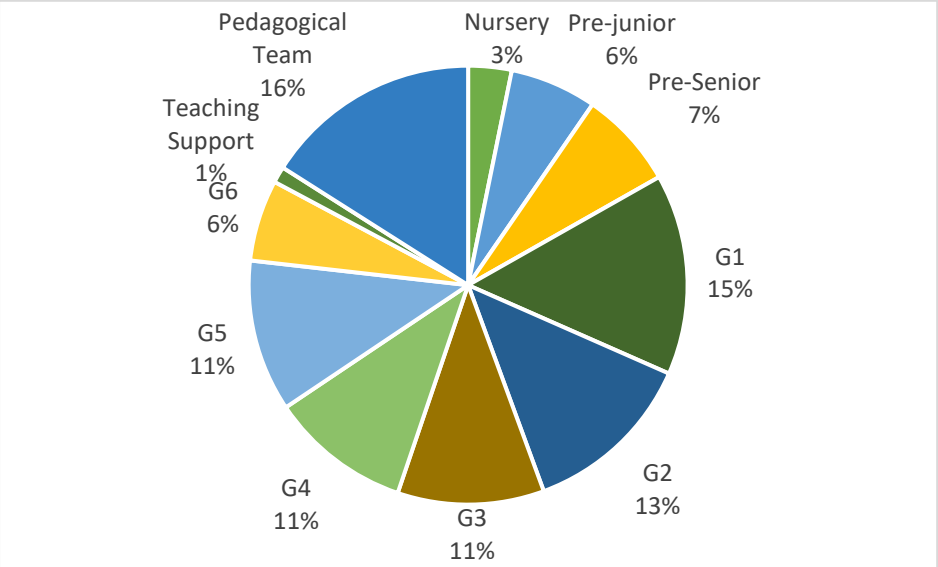


Figure 4.3

Teaching Assignment of Participants



Years of Teaching Experience

Almost 75% of the teachers in the study were experienced in teaching, with at least four years of general teaching experience, and 44% of teachers with more than eight years of teaching experience (figure 4.4). Almost half of the respondents had 1-3 years of experience in PYP teaching, and another half had a minimum of four years of experience, with some respondents(19%) having more than eight years of teaching experience in PYP (figure 4.5)

Figure 4.4

Years of Teaching Experience

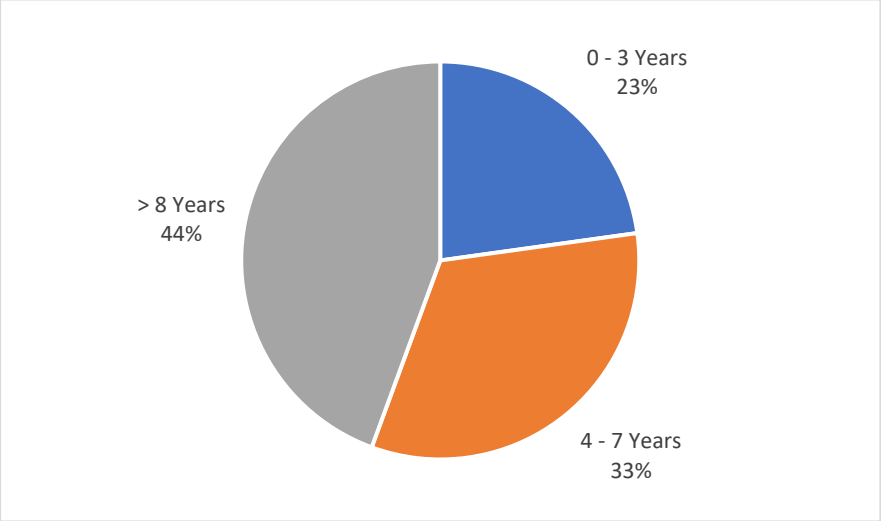
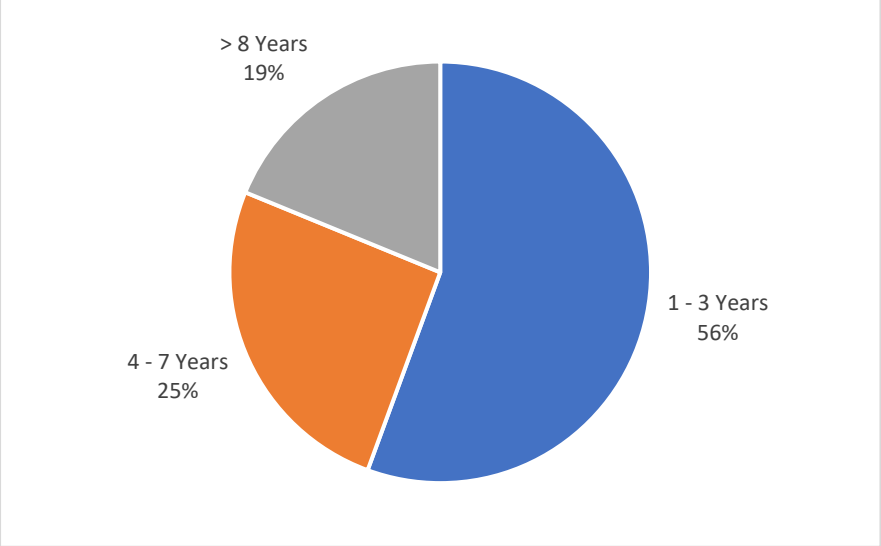


Figure 4.5

Years of Teaching Experience in PYP



Academic and Professional Qualification

Almost all the survey respondents held post-graduate, or PG diploma degrees in different disciplines (Fig 4.6) and around 67% were trained professionals with B.Ed. degree (Fig 4.7). However, almost all respondents were trained in teaching through a diploma or certificate courses.

Figure 4.6

Academic Qualification of Participants

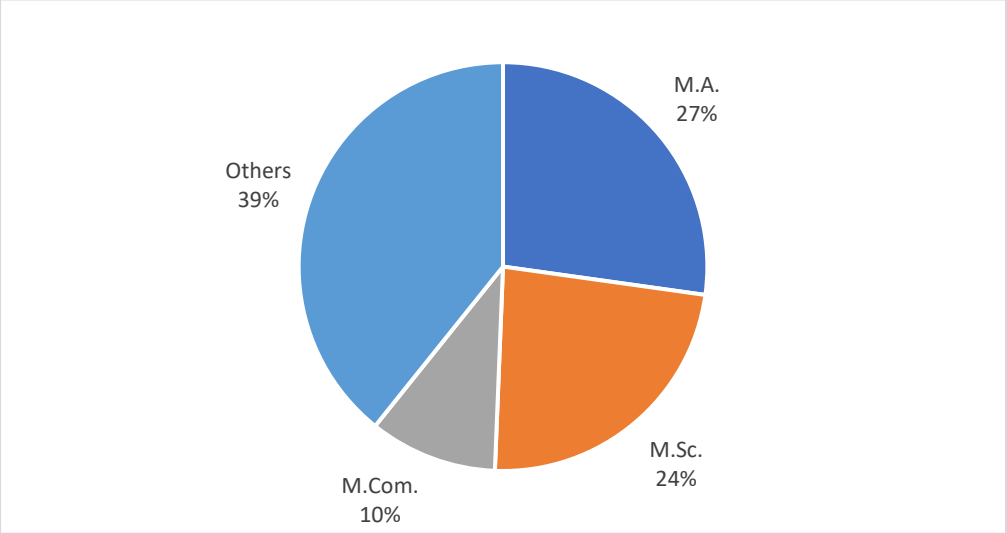
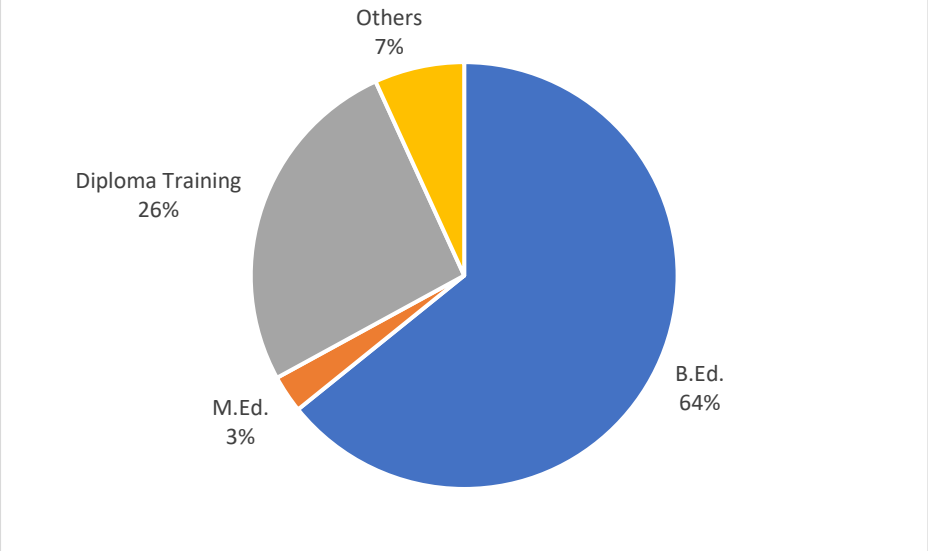


Figure 4.7

Professional Qualification of Participants



Professional Development and International Academic Exposure

Almost all respondents had attended at least one IB workshop under different categories (Fig 4.8). However, only 24% of teachers held IB teaching and learning certificates (Fig 4.9). The data shows that 40% of respondents had international academic exposure through conferences, workshops and seminars (Fig 4.10). Further investigation on professional development avenues for teachers in IB PYP schools is explored in the qualitative section.

Figure 4.8

IB Professional development

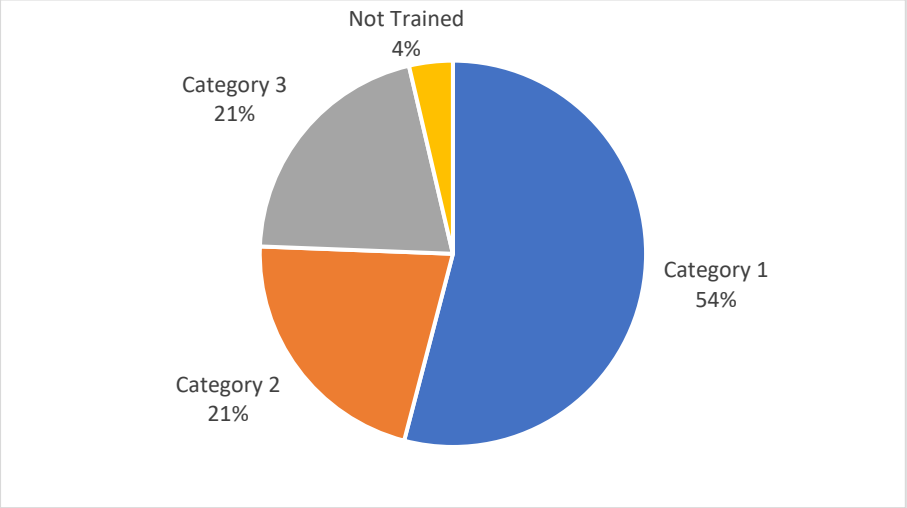


Figure 4.9

IB Certification in Teaching and Learning

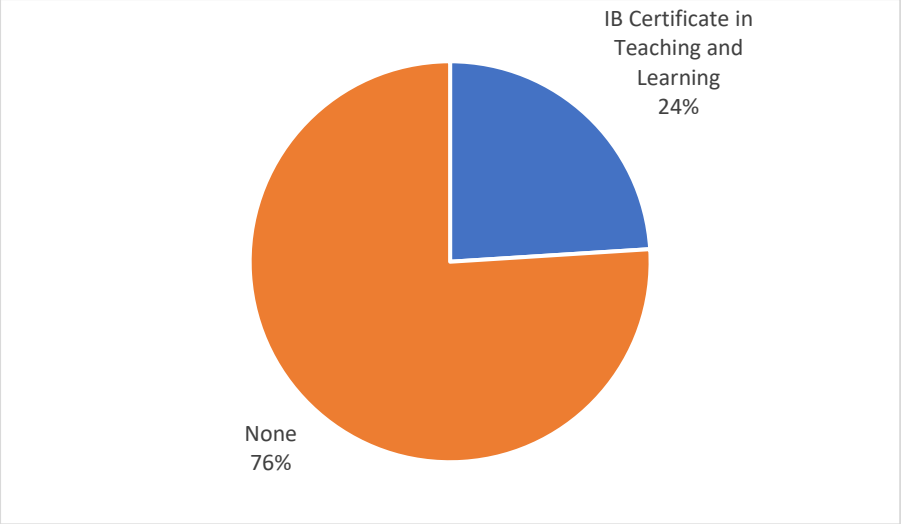
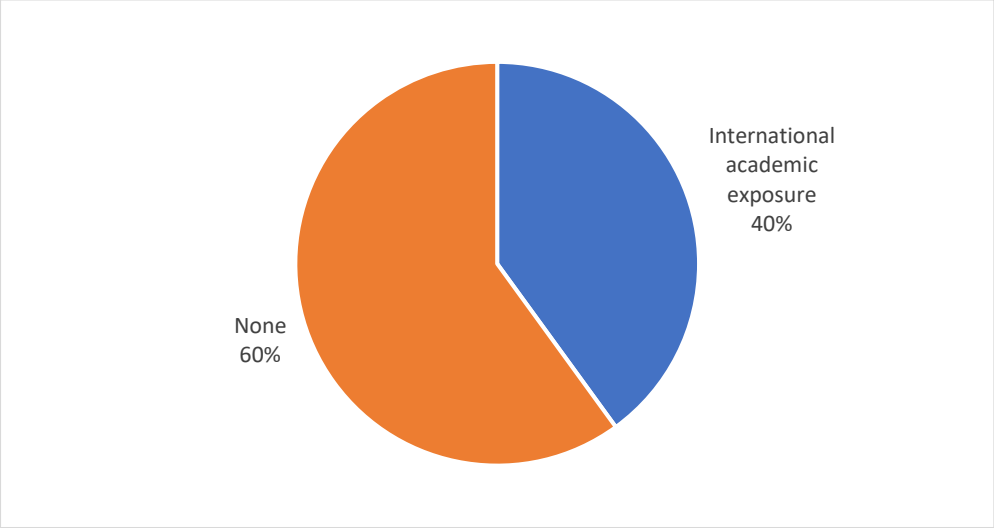


Figure 4.10

International Exposure of Participants



With the above demographic details of the respondents, the researcher was able to produce a credible interpretation of the analyzed data. The following section presents the quantitative analysis of teachers' perception of curriculum management, students' perception of PYP and classroom transactions.

4.2.1.2 Analysis of Teachers' Perceptions on Curriculum Management in IB PYP

The perception scale helped the researcher to assess teachers' perceptions on their roles and various curricular, pedagogical and leadership practices in PYP. The inferential statistics helped the researcher compare teachers' perspectives by years of teaching experience and IB professional development to understand the statistically significant differences between teachers' perspectives. The responses of PYP teachers on the Curriculum Management Teacher Perception Scale are described using frequency and percentage (in parenthesis). The analysis is presented in four sections: 1) Teacher perceptions on curriculum development in PYP, 2) Teacher perceptions on curriculum implementation in PYP, 3) Teacher perceptions on curriculum evaluation in PYP, and 4) Teacher perceptions on Pedagogical Leadership in PYP. The following sections summarize the results of the perception scale completed by two fifty PYP teachers.

Teachers' Perceptions on Curriculum Development in PYP

Table 4.1 summarizes the data related to the perception of PYP teachers on curriculum development in PYP. Twenty-five statements were included in this section. Teachers' perceptions of various components of curriculum development were collected, which included understanding the PYP curriculum, integrating PYP elements, development of curricular documents, stakeholders involved and approaches for curriculum development. The results are presented under these components in each paragraph.

Table 4.1

Teachers' Perceptions on Curriculum Development (n=250)

S.N	Statements	SA	A	N	D	SD
1	PYP curriculum makes the students inquiring within school and beyond the school	161 (64.4)	79 (31.6)	10 (4)	0 (0)	0 (0)
2	PYP provides opportunity to develop the spiritual dimension of students	40 (16)	73 (29.2)	63 (25.2)	68 (27.2)	6 (2.4)
3	PYP curriculum is developed keeping the learner profile at the focus	187 (74.8)	52 (20.8)	8 (3.2)	3 (1.2)	0 (0)
4	PYP has less scope for contextualising the curriculum based on the local needs	19 (7.6)	46 (18.4)	65 (26)	50 (20)	70 (28)
5	Technology literacy/digital literacy needs to have a place in the Learner Profile	84 (33.6)	98 (39.2)	45 (18)	17 (6.8)	6 (2.4)
6	Subject knowledge and disciplinary skills alone are necessary in the present labour market	35 (14)	45 (18)	64 (25.6)	50 (20)	56 (22.4)
7	PYP curriculum is rich in terms of its approach compared to the national curriculum for primary education	133 (53.2)	89 (35.6)	23 (9.2)	5 (2)	0 (0)
8	The national curriculum has wide range of topics to be taught at the primary level compared to PYP	34 (13.6)	59 (23.6)	83 (33.2)	50 (20)	24 (9.6)
9	PYP curriculum is overloading for parents	10 (4)	18 (7.2)	51 (20.4)	83 (33.2)	88 (35.2)
10	PYP curriculum allows easy transition from IB board to other National School board.	43 (17.2)	120 (48)	66 (26.4)	21 (8.4)	
11	POI is reviewed before the development of new POI	157 (62.8)	62 (24.8)	31 (12.4)		

12	Learner profile attributes developed in primary years are barely sustained throughout the schooling in IB	39 (15.6)	35 (14)	40 (16)	48 (19.2)	88 (35.2)
13	Parents expectations and demands are considered while developing the POI	45 (18)	58 (23.2)	80 (32)	46 (18.4)	21 (8.4)
14	The topics in POI has global significance for all students in all culture	163 (65.2)	66 (26.4)	17 (6.8)	4 (1.6)	0 (0)
15	The syllabus of the POI is alinged with the NCERT syllabus	94 (37.6)	88 (35.2)	41 (16.4)	14 (5.6)	13 (5.2)
16	POI provides oppurtunity to develop psychomotor and affective dimensions of students	137 (54.8)	98 (39.2)	15 (6)	0 (0)	0 (0)
17	POI has scope for developing higher order thinking skills	180 (72)	53 (21.2)	16 (6.4)	1 (0.4)	0 (0)
18	Multiple learning experiences are planned to gives multiple perspectives on the topic/ concept through POI	153 (61.2)	75 (30)	20 (8)	2 (0.8)	
19	Resources are mobilized effectively for the implementation of POI. (This includes classroom arrangement, learning materials, laboratories etc)	148 (59.2)	75 (30)	22 (8.8)	4 (1.6)	1 (0.4)
20	Teachers are oriented on the POI before it's implementation	188 (75.2)	27 (10.8)	33 (13.2)	2 (0.8)	0 (0)
21	Learning materials are developed by the school to transact POI	162 (64.8)	69 (27.6)	18 (7.2)	1 (0.4)	0 (0)
22	Parents are given orientation regarding the POI and their role in student’s learning	128 (51.2)	76 (30.4)	36 (14.4)	6 (2.4)	4 (1.6)
23	Development of POI is a collaborative task	173 (69.2)	48 (19.2)	21 (8.4)	8 (3.2)	0 (0)
24	Teachers are encouraged to contribute for the development of POI through the exchange of thoughts, speech, writing, and behavior	164 (65.6)	64 (25.6)	18 (7.2)	3 (1.2)	1 (0.4)
25	The school revises the POI regularly	192 (76.8)	55 (22)	3 (1.2)	0 (0)	0 (0)

Respondents strongly indicated (85%) that the PYP curriculum enables students to be inquirers within and beyond school due to its robust approach to teaching-learning. Various statements

addressed the inclusion of PYP elements in developing the written curriculum of that Program of Inquiry (POI). Almost all teachers (95%) perceived that the Learner profile is at the centre of curriculum development. However, the response for sustaining learner profile attributes after PYP was diverse 30% of teachers indicated it is not sustained, 45% indicated it is sustained, and 16% were equivocal. Most of the respondents (73%) indicated the importance of digital literacy inclusion in the Learner Profile. Almost all respondents indicated that POI provides opportunities for developing psychomotor, affective, and higher-order thinking skills. Teachers perceived that the scope of spiritual development through POI is emerging in PYP. Around 90 % of respondents agreed that topics in POI are of global significance and relevant to all students; thus, multiple learning experiences that bring multiple perspectives were seen as prominent in POI.

About 40% of respondents indicated that the national curriculum has a wide range of topics for inclusion in PYP and the POI was developed aligning with the national curriculum (70%). The strong alignment of POI with the national curriculum has enabled the easy transition from PYP to the national school board (reflected in the agreement of 65% in statement 10). However, the response was diverse for the statement, "PYP has less scope for contextualizing the curriculum based on the local needs". The local needs can be considered as the parents' expectation; the response was varied, with 40% in agreement and 32% neutral. This was further investigated on how the teachers perceived the contextualization of the PYP curriculum in the local context.

Respondents strongly indicated (90%) that learning materials were developed by the schools based on POI. Teachers strongly indicated (88%) that curriculum development was a collaborative process where teachers are encouraged to contribute to the development of POI and planners.

Most indicated that POI is revised regularly, and teachers and parents are oriented on POI and their roles before implementation. The findings on aligning the PYP curriculum with the national curriculum, including PYP elements in POI, and approaches to developing POI were further explored through qualitative data sets.

Teachers' Perceptions on Curriculum Implementation in PYP

Table 4.2 summarizes the data related to the perception of teachers on curriculum implementation in PYP. Eighteen statements and two open-ended questions were included in this section which addressed the teacher's role in curriculum transaction, the inclusion of PYP elements in teaching-learning, inquiry-based teaching-learning, classroom environment,

Learner profile implementation and student engagement in PYP classrooms. The results are presented under each component.

Table 4.2

Teachers' Perceptions on Curriculum Implementation (n=250)

S.N	Statements	SA	A	N	D	SD
1	I adopt pedagogical approaches which caters to the need of all the students	158 (63.2)	76 (30.4)	16 (6.4)	0 (0)	0 (0)
2	I support students to learn actively both inside and outside classroom	185 (74)	59 (23.6)	6 (2.4)	0 (0)	0 (0)
3	I believe each child is unique and has an ability to inquire into the world	221 (88.4)	29 (11.6)	0 (0)	0 (0)	0 (0)
4	Students questioning is a disturbance to the class	3 (0.8)	16 (6.4)	1 (0.4)	28 (11.2)	202 (80.8)
5	I solve all the problems of students in the classroom	79 (31.6)	96 (38.4)	56 (22.4)	9 (3.6)	10 (4)
6	I provide platform for students to share their ideas	176 (70.4)	65 (26)	9 (3.6)	0 (0)	0 (0)
7	I adopt inquiry based teaching as it is mandatory for the IB PYP teachers	164 (65.6)	63 (25.2)	17 (6.8)	0 (0)	6 (2.4)
8	I facilitate students to participate actively in their own learning	168 (67.2)	76 (30.4)	6 (2.4)	0 (0)	0 (0)
9	I address the human commonality and diversity through transdisciplinary themes	149 (59.6)	79 (31.6)	22 (8.8)	0 (0)	0 (0)
10	Transdisciplinary approach for teaching and learning is not relevant for primary level	5 (2)	14 (5.6)	22 (8.8)	52 (20.8)	157 (62.8)
11	Transdisciplinary approach for teaching and learning is not user friendly for teachers	1 (0.4)	19 (7.6)	15 (6)	60 (24)	155 (62)
12	Transdisciplinary approach doesn't have greater scope for the development of strong subject base	8 (3.2)	14 (5.6)	19 (7.6)	70 (28)	139 (55.6)
13	I give time and space for student reflection in classroom	180 (72)	56 (22.4)	13 (5.2)	1 (0.4)	0 (0)

14	I gather evidences of the development of learner profile attribute among students	150 (60)	67 (26.8)	33 (13.2)	0 (0)	0 (0)
15	I use ICT to provide personalised, creative and independent learning experiences for students	113 (45.2)	98 (39.2)	21 (8.4)	16 (6.4)	2 (0.8)
16	I use ICT to share my ideas and practices with other teachers	162 (64.8)	75 (30)	10 (4)	2 (0.8)	1 (0.4)
17	I don't prefer ICT during teaching learning	4 (1.6)	10 (4)	28 (11.2)	41 (16.4)	167 (66.8)
18	I reflect on my own teaching after each session and plan accordingly for the next session	170 (68)	75 (30)	5 (2)	0 (0)	0 (0)

Most teachers (around 70%) perceived transdisciplinary teaching as relevant at the primary level and having good scope to develop disciplinary knowledge and skills. Also, most reported that transdisciplinary teaching could be easily adopted in classrooms, but only a few teachers found it not teacher-friendly (8%). Almost all teachers (90%) reported addressing human commonality and diversity through transdisciplinary themes. Transdisciplinary and inquiry teaching-learning was further explored through classroom observations and interviews.

It was seen that IB had a strong regulatory influence on teachers' pedagogical approach in classrooms; around 90% of teachers responded that they adopt inquiry-based teaching as it is mandatory in IB PYP. Almost all teachers (97%) perceived each child as unique and could learn through inquiry. Thus they (80%) assumed the role of a facilitator who supported active and autonomous learning among students.

In support of inquiry learning, teachers (90%) reported using pedagogical approaches to cater to all needs of students. Most of the teachers (90%) reported encouraging student questioning and providing platforms to share their ideas and reflect on learning in the classroom. Further, teachers (98%) reported self-reflection exercises after teaching.

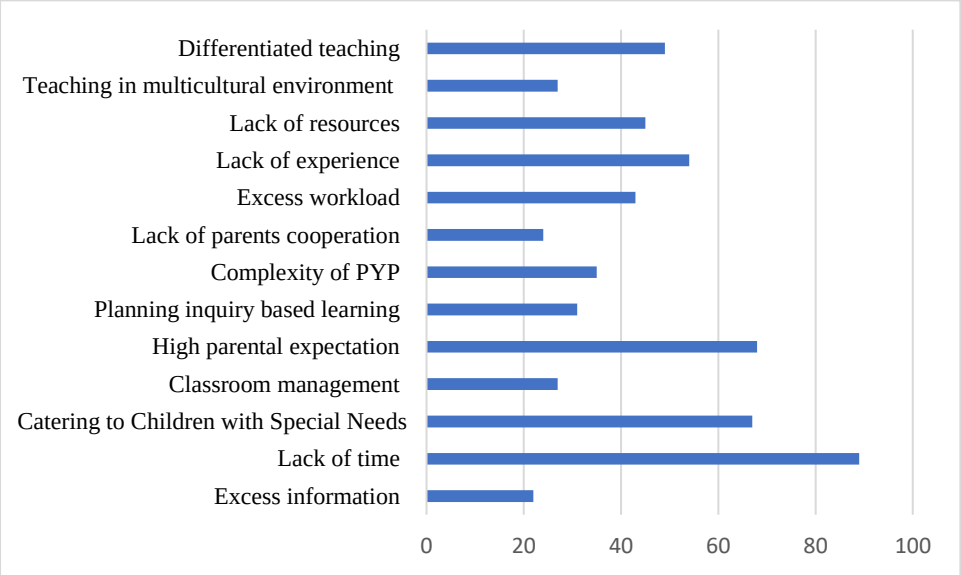
The learner profile is the core of PYP, and it was seen that teachers (86%) gathered evidence on demonstrating Learner profile attributes by students. The results indicated that almost all teachers used ICT to different degrees in various stages of the teaching-learning process; 85% of teachers reported using ICT to provide personalized learning experiences to students, and 95% for sharing ideas with teachers.

Challenges

The teachers were asked to mention their challenges while implementing the PYP curriculum in schools. The data obtained were analysed using frequency and presented in the following figure (Fig 4.11)

Figure 4.11

PYP Teachers' Challenges



From the above figure, it can be inferred that lack of time was the major challenge in implementing the PYP curriculum. This issue needs further examination as this could be related to institutional priorities and timetabling. The second most noted challenge was high parental expectations. The issue of high expectations from parents was further explored to find out the reasons and areas of expectations. Another major challenge was reported in catering to the children with special needs; this also is related to differential learning; thus, differentiated learning was perceived as a challenge. It is interesting to note that even though differentiated teaching was seen as a challenge, most of the teachers (90%) in the perception scale have indicated adopting pedagogical approaches to cater to the needs of all students. This area was further explored to understand the perceptions and practices of differentiated learning in PYP classrooms. Lack of experience was also reported as a challenge by most teachers. However, the demographic data on teachers' experience in PYP schools show that around 75% have experience in PYP between one to four years (fig 5). This finding may imply that teachers require at least three to four years of experience to internalize the PYP curriculum and effective practice in the school.

Teachers' Perceptions on Curriculum Evaluation in PYP

Table 4.3 summarizes the data related to teachers' perception on curriculum evaluation in PYP. The statements addressed the perception on the self-study process, data collection activities, and stakeholders' involvement in curriculum evaluation. A total of ten statements were included in this section. The results are presented component-wise in each paragraph.

Table 4.3

Teachers' Perceptions on Curriculum Evaluation (n=250)

S.N	Statements	SA	A	N	D	SD
1	The evaluation of Curriculum is mandatory during the self-study process	129 (51.6)	79 (31.6)	40 (16)	1 (0.4)	1 (0.4)
2	Case studies/ rich description of the POI development process is collected during the self-study process	100 (40)	84 (33.6)	57 (22.8)	6 (2.4)	3 (1.2)
3	Classroom observations are made by the internal teachers/ principal during the self-study process	112 (44.8)	94 (37.6)	31 (12.4)	8 (3.2)	5 (2)
4	All the teaching staff are involved in the self-study process	150 (60)	77 (30.8)	15 (6)	6 (2.4)	2 (0.8)
5	Students are involved in the self-study process	78 (31.2)	83 (33.2)	52 (20.8)	22 (8.8)	15 (6)
6	Parents are involved in the self-study process	79 (31.6)	46 (18.4)	69 (27.6)	40 (16)	16 (6.4)
7	Curriculum evaluation (a part of self-study) is merely a paperwork in the school	15 (6)	27 (10.8)	37 (14.8)	59 (23.6)	112 (44.8)
8	Curriculum evaluation is a burden for teachers due to huge paperwork and documentation	13 (5.2)	25 (10)	57 (22.8)	60 (24)	95 (38)
9	Self-study helps teachers in improving their performance	179 (71.6)	61 (24.4)	10 (4)	0 (0)	0 (0)
10	Curriculum evaluation is conducted to retain the recognition from the IBO	16 (6.4)	27 (10.8)	27 (10.8)	67 (26.8)	113 (45.2)

Teachers (83%) affirmed that curriculum evaluation is mandatory during the self-study process. Interestingly, only 17% of respondents considered curriculum evaluation to be done to retain the recognition of IB. This might imply that the IB recognition is not directly linked with the curriculum evaluation/self-study process alone; it might also indicate the value

teachers hold on self-study. This is expressed in responses to statements 7, 8, and 9. Most teachers (around 90%) acknowledged the importance of self-study in their improved performance.

It was noted by most of the participants (73%) that various pieces of evidence are collected during the self-study process, where classroom observations are one of the major activities (82%). There was a different degree to which stakeholders were involved in self-study. Around 90% of respondents indicated the involvement of all teaching staff, 64% indicated the involvement of students, and 49% indicated the involvement of parents. Other aspects of curriculum evaluation, such as student assessment, procedures, and timeline of curriculum evaluation, were explored through classroom observation and interviews.

Teachers' Perceptions on Pedagogical Leadership in PYP

Table 4.4 summarizes the data related to the perception of teachers on pedagogical leadership in PYP. Since the principal is the head of the pedagogic leadership team who drives the leadership practices in the school, most of the statements were based on the principal's role and practices and general leadership practices. Statements related to distributed leadership, building relationships with stakeholders, professional development and community engagement were included in this section. The results combined are presented component-wise below.

Table 4.4

Teachers' Perceptions on Pedagogical Leadership (n=250)

S.N	Statements	SA	A	N	D	SD
1	The principal and teachers reciprocate mutual trust and respect	193	44	13	0	0
		(77.2)	(17.6)	(5.2)	(0)	(0)
2	Collaborative reflective planning is in place to ensure the alignment of curriculum with the mission of IB PYP	193	36	21	0	0
		(77.2)	(14.4)	(8.4)	(0)	(0)
3	The principal clearly conveys the pedagogical approach that is emphasized by the IB PYP to the teachers	201	38	10	0	0
		(80.4)	(15.2)	(4)	(0)	(0)
4	The principal doesn't consider the suggestions made by teachers	1	3	18	42	185
		(0.4)	(1.2)	(7.2)	(16.8)	(74)
5	The principal encourages all teachers to participate in improving students' academic achievements and learner profile	228	11	11	0	0
		(91.2)	(4.4)	(4.4)	(0)	(0)

6	Principal instructs the teachers what to teach and how to teach	56 (22.4)	31 (12.4)	62 (24.8)	44 (17.6)	56 (22.4)
7	Works with teachers on pedagogical issues for improvement.	140 (56)	43 (17.2)	21 (8.4)	20 (8)	26 (10.4)
8	Principal directs teachers by setting goals that both agree on	130 (52)	65 (26)	24 (9.6)	24 (9.6)	7 (2.8)
9	The principal encourage autonomy of teachers in decision making regarding the pedagogical approaches adopted and learning resources used in the classroom	130 (52)	90 (36)	13 (5.2)	9 (3.6)	7 (2.8)
10	The principal allows the teachers to define their own roles and responsibility	110 (44)	60 (24)	30 (12)	30 (12)	20 (8)
11	The principal doesn't interfere in pedagogical practices of teachers in the school	100 (40)	65 (26)	29 (11.6)	16 (6.4)	40 (16)
12	The principal rarely considers teachers' expertise in teaching in decision making on pedagogical issues	13 (5.2)	31 (12.4)	18 (7.2)	67 (26.8)	121 (48.4)
13	The principal gives leadership position to teachers and provides sufficient resources and time to make meaningful contributions to students learning	175 (70)	54 (21.6)	13 (5.2)	8 (3.2)	0 (0)
14	The principal along with teachers share accountability for students' academic performance	173 (69.2)	52 (20.8)	21 (8.4)	4 (1.6)	0 (0)
15	Protects teachers' classroom time from external disruptions.	140 (56)	52 (20.8)	27 (10.8)	14 (5.6)	17 (6.8)
16	Shelters teachers from disruptive politics.	125 (50)	50 (20)	32 (12.8)	17 (6.8)	26 (10.4)
17	The principal provides platform for collaborative learning of teachers within the school and outside the school	184 (73.6)	52 (20.8)	14 (5.6)	0 (0)	0 (0)
18	The principal arranges professional development programs for newly recruited teachers	180 (72)	17 (6.8)	30 (12)	12 (4.8)	11 (4.4)
19	The principal identifies the strengths of teachers and inspires them to raise to higher levels	193 (77.2)	45 (18)	11 (4.4)	0 (0)	0 (0)
20	Diligent reader of professional literature.	100 (40)	65 (26)	29 (11.6)	16 (6.4)	40 (16)

21	Knowledgeable about instructional practices.	140 (56)	43 (17.2)	21 (8.4)	20 (8)	26 (10.4)
22	Actively involved in curriculum development, implementation and evaluation	214 (85.6)	24 (9.6)	12 (4.8)	0 (0)	0 (0)
23	The principal makes regular classroom observation and provides feedback to teachers	40 (16)	50 (20)	60 (24)	50 (20)	40 (16)
24	Recognizes accomplishments of students and give suitable reinforcement.	140 (56)	51 (20.4)	29 (11.6)	30 (12)	0 (0)
25	The principal is in constant communication with all the stakeholders	145 (58)	44 (17.6)	50 (20)	10 (4)	1 (0.4)
26	Teachers and students listen to the ideas/concerns of the principal because of his/her skills, knowledge and personality	160 (64)	21 (8.4)	39 (15.6)	16 (6.4)	14 (5.6)
27	The principal dedicates more than 60% time on improving students learning	187 (74.8)	26 (10.4)	33 (13.2)	4 (1.6)	0 (0)
28	The principal dedicates more than 50% time on administration and paper work	59 (23.6)	30 (12)	97 (38.8)	45 (18)	18 (7.2)
29	The principal extends his/ her services to the larger community	160 (64)	36 (14.4)	40 (16)	5 (2)	5 (2)
30	The principal encourages community participation in the school activities and vice versa	181 (72.4)	51 (20.4)	17 (6.8)	0 (0)	0 (0)

Almost all participants (95%) affirmed that collaboration is the critical element of pedagogic leadership in PYP. The data indicated that principals communicate with all the stakeholders on PYP implementation. The respondents perceived (90%) that role of the principal is crucial in building trust among teachers.

Most participants indicated that leadership is distributed in PYP schools where the principal identifies the strength of teachers and assigns leadership positions. Teacher autonomy is closely related to pedagogical leadership. The data indicated a fair degree of teacher autonomy with regard to making pedagogical decisions in the classroom, for example, About 88% of respondents noted that principals encourage the autonomy of teachers in decision-making regarding the pedagogical approaches and 66% of respondents noted that they are allowed to define their roles and responsibility. However, it is interesting to note the variability in

responses for statement 6: ‘Principal instructs the teachers what to teach and how to teach- around 35% agreed, 25% neither agreed nor disagreed, and 40% disagreed. These findings on teacher autonomy were further investigated.

Most teachers reported that the principals have good pedagogical knowledge and work with teachers to improve student learning. The data also indicated that principals provide opportunities for professional development for teachers. Several questions were asked to understand the leadership style of the principals. The data suggested that the principals’ leadership style was near to the transformational style. Over 90% of respondents noted the active role played by the principal in community development. Overall, the teachers positively perceived pedagogical leadership practices in PYP.

4.2.1.3 Teachers’ Perception on Curriculum Management with Different Years of Teaching Experience and Different Categories of IB Professional Development.

The literature suggested that teachers’ perceptions may vary with the years of teaching experience and professional development. Thus a non-parametric Kruskal –Wallis test (inferential statistics) was conducted to determine if there was any significant difference in the teachers’ perception in relation to their years of teaching experience in PYP and IB professional development on curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership. This test was used as the assumption of the equality of group variances was violated. H is treated as the Chi-square value if the number of participants (n) is more than 5. H is statistically significant if it is equal to or larger than the critical value of Chi-Square for the particular d.f. In this case, the number of participants (250) was more than five; thus, H was treated as the Chi-square with df 2.

Kruskal-Wallis's analysis compares three groups of teachers with different years of experience on the perception of curriculum management in PYP.

Multiple Kruskal –Wallis tests (inferential statistics) were conducted to determine if there were any significant differences in the teachers’ perception in relation to their years of teaching experience in PYP on curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership. Table 4.5 presents Chi-square values calculated for each group of teachers with different years of experience in PYP for each component (curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership).

Table 4.5

Chi-Square Values (years of teaching experience)

	Curriculum Development	**Curriculum Implementation**	**Curriculum Evaluation**	**Pedagogical Leadership**
Chi-Square	12.824	18.463	8.031	13.483
df	2	2	2	2
Asymp. Sig.	0.01	0.01	0.02	0.01

As seen in table 4.5, the results indicated significant differences among the three groups on perception on curriculum development- H=12.824,p=0.01; on curriculum implementation- H=18.463, p=0.01; on curriculum evaluation- H=8.031, p=0.02; on pedagogical leadership- H=13.483, p=0.01.

Table 4.6 shows the mean ranks of the teachers' perception with different years of experience in IB PYP on curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership.

Table 4.6

Mean Ranks of Teacher Perception (years of teaching experience)

Mean Ranks			
Teaching experience in IB PYP		N	Mean Rank
Curriculum Development	1 - 3 Years	139	111.06
	4 - 7 Years	64	140.32
	More than 8 Years	47	148.03
	Total	250	
Curriculum Implementation	1 - 3 Years	139	108.46
	4 - 7 Years	64	152.70
	More than 8 Years	47	138.86
	Total	250	
Curriculum Evaluation	1 - 3 Years	139	115.27
	4 - 7 Years	64	130.58
	More than 8 Years	47	148.85
	Total	250	
Pedagogical Leadership	1 - 3 Years	139	111.68
	4 - 7 Years	64	134.50
	More than 8 Years	47	154.12
	Total	250	

The results indicate that the mean rank of teachers with more than eight years of teaching experience had a more positive perception on curriculum development (148) than teachers with less teaching experience,140 for teachers with 4-7 years of experience, and 111 for teachers with 1-3 years of experience in PYP. However, the mean rank of teachers with 4-7 years of experience had a more positive perception on curriculum implementation (152) than teachers with more than eight years of experience (138) and 1-3 years of experience (108). This result was investigated further in the qualitative strand. The mean rank of teachers with more than eight years of teaching experience had more positive perceptions on curriculum evaluation (149) than teachers with less teaching experience,130 for teachers with 4-7 years of experience, and 115 for teachers with 1-3 years of experience in PYP. The mean rank of teachers with more than eight years of teaching experience had more positive perceptions on pedagogical leadership (154) than teachers with less teaching experience, 134 for teachers with 4-7 years of experience, and 111 for teachers with 1-3 years of experience in PYP. Overall, the teachers with a higher number of teaching experience in PYP had a positive perception on curriculum management in IB PYP schools.

Kruskal-Wallis analysis comparing three groups of teachers with different IB professional development on the perception of curriculum management in PYP.

Multiple Kruskal –Wallis tests (inferential statistics) were conducted to determine if there were any significant differences in the teachers' perception in relation to their IB professional development on curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership. Table 4.7 presents Chi-square values calculated for each group of teachers with different IB professional development for each component (curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership).

Table 4.7

Chi-Square Values (IB Professional development)

	Curriculum development	**Curriculum implementation**	**Curriculum evaluation**	**Pedagogical leadership**
Chi-Square	7.509	7.555	6.321	12.084
df	2	2	2	2
Asymp. Sig.	0.023	0.023	0.042	0.002

As seen in table 4.7, the results indicated significant differences among the three groups on perception on curriculum development, H=7.509, p=0.02; on curriculum implementation,

H=7.55, p=0.02; on curriculum evaluation, H=6.32, p=0.04; on pedagogical leadership, H=12.084, p=0.01.

Table 4.8 shows the mean ranks of the teachers' perception with different IB professional development training on curriculum development, curriculum implementation, curriculum evaluation and pedagogical leadership.

Table 4.8

Mean Ranks of Teacher Perception (IB Professional development)

Mean Ranks			
IB professional development		N	Mean Rank
Curriculum development	Category 1	133	110.25
	Category 2	53	119.64
	Category 3	51	141.15
	Total	237	
Curriculum implementation	Category 1	133	110.20
	Category 2	53	119.76
	Category 3	51	141.15
	Total	237	
Curriculum evaluation	Category 1	133	109.48
	Category 2	53	126.74
	Category 3	51	135.78
	Total	237	
Pedagogical leadership	Category 1	133	106.70
	Category 2	53	124.76
	Category 3	51	145.08
	Total	237	

The results suggest that the mean rank of teachers with Category 3 professional development (PD) had a more positive perception on curriculum development (141) than teachers with category 2 PD (119) and category 1 PD (110). The mean rank of teachers with Category 3 professional development had a more positive perception on curriculum implementation (141) than teachers with other categories of professional development training,119 for teachers with category 2 PD, and 110 for teachers with category 1 PD. The mean rank of teachers with Category 3 professional development had a more positive perception on curriculum evaluation (135) than teachers with other categories of professional development training,126 for teachers with category 2 training, and 109 for teachers with category 1 training. The mean rank of teachers with Category 3 professional development had a more positive perception on pedagogical leadership (145) than teachers with other categories of professional development

training, 124 for teachers with category 2 training, and 106 for teachers with category 1 training. Overall, the teachers with category 3 training positively perceived curriculum management in IB PYP schools.

4.2.2 Analysis of Students' Perception on IB PYP

The student survey provided important information on the perception of students on PYP. Specifically, the survey enabled the researcher to assess student perception of school, teachers, teaching and learning, and themselves as learners. 58% of the respondents were male, and 42% were female in the age group 12-13 years (grades 4 and 5). The analysis of the responses on various aspects is presented in this section.

4.2.2.1 Students' Perceptions on the School

Table 4.9 summarizes the data related to the perception of students on the school. Five questions were asked about PYP school.

Table 4.9

Students' Perception of School (n=300)

Statements	**I agree a lot**	**I agree a little**	**I disagree**
I enjoy being a student in the school	245 (81.7)	46 (15.3)	9 (3.0)
I get international exposure in my school	185 (61.7)	101 (33.7)	14 (4.7)
I get technology resources to learn in my school	237 (79.0)	55 (18.3)	8 (2.7)
My school encourages academics, sports, music, drawing, arts and dance equally	227 (75.7)	56 (18.7)	17 (5.7)
I feel safe in the school	248 (82.7)	30 (10.0)	22 (7.3)

Students who participated in the survey strongly indicated a positive attitude towards the school they studied. An overwhelming majority, 82% of students, reported that they enjoyed being in the school. Similarly, around 80% of students reported feeling safe at school. More than 70% indicated that the school has good technological resources and encourages academics and co-curricular activities. These responses indicated a high level of satisfaction with the PYP schools under the study.

4.2.2.2 Students' Perceptions as Learners

Table 4.10 summarizes the data related to the perception of students on themselves as learners.

Table 4.10

Students' Perception as a Learner (n=300)

Statements	**I agree a lot**	**I agree a little**	**I disagree**
I am successful as a student.	218 (72.7)	77 (25.7)	5 (1.7)
I am successful because of my hard work	198 (66.0)	94 (31.3)	8 (2.7)
I am always trying to improve my learning	239 (79.7)	58 (19.3)	3 (1.0)
I feel confident in the school	197 (65.7)	98 (32.7)	5 (1.7)
I am good at using technology for learning	190 (63.3)	98 (32.7)	12 (4.0)

Students generally perceived that they felt confident at school. Around 65% of students agreed with the statement, 'I feel confident at school.' Additionally, the students perceived that they were academically successful; over 70% agreed with the statement, 'I am successful as a student. Moreover, the students commonly perceived that their success was due to hard work. For an instant, more than 60% of students agreed with the statement,' I am successful because of my hard work. Also, students appeared dedicated to improving their scores, with 80% agreeing with the statement, 'I am trying to improve my scores.' These responses indicated that students were positive about themselves as learners and understood that their success depends on hard work and commitment.

4.2.2.3 Students' Perceptions on Scholastic Subjects

Table 4.11 summarizes the data related to the perception of students on scholastic subjects-English, Mathematics, and Science. Five questions on each subject were asked in the questionnaire.

Table 4.11

Students' Perception on Scholastic Subjects (n=300)

Subject	Statements	I agree a lot	I agree a little	I disagree
English	I usually do well in English	173 (57.7)	114 (38.0)	13 (4.3)
	I enjoy learning English	214 (71.3)	50 (16.7)	36 (12.0)
	I am not good at English	24 (8.0)	94 (31.3)	182 (60.7)
	I would like to do better in English	184 (61.3)	93 (31.0)	23 (7.7)
	English is harder for me than for my classmates.	20 (6.6)	90 (29.7)	190 (62.7)
Mathematics	I usually do well in mathematics.	181 (60.3)	111 (37.0)	8 (2.7)
	I enjoy learning mathematics.	230 (76.7)	59 (19.7)	11 (3.7)
	I am not good at mathematics.	19 (6.3)	87 (29.0)	194 (64.7)
	I would like to do better in mathematics	217 (72.3)	60 (20.0)	23 (7.7)
	Mathematics is harder for me than for my classmates.	50 (16.5)	90 (29.7)	160 (52.8)
Science	I usually do well in Science	208 (69.3)	77 (25.7)	15 (5.0)
	I enjoy learning Science	255 (85.0)	32 (10.7)	13 (4.3)
	I am not good at Science	24 (8.0)	82 (27.3)	194 (64.7)
	I would like to do better Science	187 (62.3)	85 (28.3)	28 (9.3)
	Science is harder for me than for my classmates.	17 (5.7)	86 (28.7)	197 (65.7)

The data indicated that most students enjoyed learning the scholastic subjects, English, Mathematics and Science. Around 60% of students reported that they do well in these subjects. Moreover, most of the students (more than 60%) expressed that they would like to do better in scholastic subjects. In addition, more than 70% of students indicated that they enjoyed studying English, Mathematics and Science. While the agreement for the statement, 'I usually do well in mathematics, was 60%, it is interesting to note that 16.5% of students agreed with the statement, 'Mathematics is harder for me than for my classmates. Students agreed at a meagre percentage on other subjects for this statement. This indicated that Mathematics learning is not perceived as easy by students in PYP. However, most students enjoyed learning and were urged to do better in the scholastic subjects.

4.2.2.4 Students' Perceptions on Teachers

Table 4.12 summarizes the data related to the perception of students on teachers in PYP. Five questions regarding teachers were asked in the questionnaire.

Table 4.12

Students' Perception on Teacher (n=300)

Statements	**I agree a lot**	**I agree a little**	**I disagree**
My teachers encourage me to ask questions.	240 (79.2)	25 (8.2)	35 (11.5)
I understand the lessons taught by teachers	211 (70.3)	80 (26.7)	9 (3.0)
I am afraid of my teachers	25 (8.2)	71 (23.7)	201 (66.3)
My teachers praise me for good work	220 (73.3)	69 (23.0)	11 (3.7)
My teachers give personal care and attention	197 (65.7)	79 (26.3)	24 (8.0)

In general, students indicated a positive attitude towards their teachers. Questions are a critical aspect of inquiry learning. The data indicated most agreement (79%) with the statement, 'My teachers encourage me to ask questions. Similarly, the data indicated that most students understand the lessons taught by teachers (70%). Nearly three-quarters (73.3%) of students indicated that their teachers praise them for good work. Additionally, about 65% of students

reported that their teachers give personal care and attention, and only 8% were afraid of their teachers.

4.2.2.5 Students' Perceptions on their Engagement in Classroom

Table 4.13 summarizes the data related to student activities/ engagements in the classroom. Five questions on this aspect were asked in the questionnaire.

Table 4.13

Students' Perception on Classroom Engagement (n=300)

Statements	**I agree a lot**	**I agree a little**	**I disagree**
I listen to the teacher talk.	169 (56.3)	114 (38.0)	17 (5.7)
I am active in the classroom	234 (78.0)	57 (19.0)	9 (3.0)
I ask questions in the classroom	210 (69.3)	51 (16.8)	39 (12.8)
I work with my classmates or friends on a project or a problem	226 (75.3)	58 (19.3)	16 (5.3)
I work alone to solve a problem	50 (16.6)	172 (56.7)	78 (25.7)

Almost 78% of students in the study reported being active in the classroom. Further, the data indicated that around half of students (56%) listen to teachers talk in the classroom, which was further investigated. Around 69% of students reinforced the aspect of questioning in the classroom. This finding indicated that questioning is a major element in PYP classrooms. The responses to statements 4 and 5 suggested that collaborative/ cooperative learning was prominent in classrooms. While 75% of students agreed that they work with their classmates on a project/ to solve problems, only 16% reported working alone. This is indicative of a collaborative learning environment; however, it should be noted that individual learning was also in place in PYP classrooms.

4.2.2.6 Students' Perceptions of their Actions and Behaviours related to Learner Profile Attributes

Table 4.14 summarizes students' perceptions of their actions and behaviour related to each Learner Profile attribute. The responses of students are analyzed by calculating the mean and rank.

Table 4.14

Students' Perceptions on Learner Profile (n=300)

Statements	**Mean**
I ask questions to learn and know more	2.82
I know a lot about different things	2.74
I use my mind to consider ideas and make judgment	2.69
I can express myself in many ways	2.68
I understand the difference between right and wrong	2.66
I am willing to listen and consider everyone's point of view	2.63
I am kind and care for others	2.61
I am willing to take chances for greater success	2.60
I have many interests. I work and play hard	2.45
I think deeply about my learning, others and myself	2.44

The table shows that the most agreed statement is 'I ask questions to learn and know more. This indicated that students' question was a crucial element in inquiry. The second statement, which has the highest mean, is 'I know a lot about different things; this finding suggested that the students perceive that they are knowledgeable about many things. Statements 6, 7 and 8 are related to the Learner Profile attributes, Risk-taking, caring and open-mindedness, respectively. The mean (around 2.6) of these statements indicates that these attributes are still emerging among students. The statements with the lowest mean are, 'I have many interests. I work and play hard, and 'I think deeply about my learning, others and myself. These statements are related to the Learner Profile Attributes- Balanced and Reflective, respectively.

In totality, the data indicated that the students perceive they demonstrate most of the Learner Profile attributes. However, understanding Learner Profile development and demonstration need deeper investigation through qualitative research approaches.

4.2.3 Analysis of Classroom Transaction Process in PYP

A total of 30 classes were selected in IB PYP schools for observation. The observation was done using the observation schedule developed by the researcher. The aim was to document the common practices across the PYP classrooms and to identify the IB-specific practices if they existed. Approximately nine teachers from each school were selected by the coordinator/principal for classroom observation. In a few cases, observations were made on a block class period, considered as two classes that accounted for the observation of one teacher, thus making a total of 30 classroom observations.

The classroom observation schedule consisted of 90 items organized into four major parts, 1. Teacher's role as facilitator 2. Taught curriculum 3. Students' behaviour 4. Classroom environment. Each category has several indicators or questions generic to teaching learning and specific to PYP practices.

A mean score and standard deviation for each indicator (except for frequency count items) were determined and placed in the table. Mean ratings for each indicator were then put into a category of low, mid and high on the table for all the 30 classroom observations representing the indicator's rating in alignment with the PYP practices like inquiry-based methods and transdisciplinary teaching. A rating of 1 to 3 represents poor alignment, 4 to 5 represents average alignment, and 6 to 7 equals high alignment with PYP practices.

Since only 30 classes were observed, the data is not generalizable across all PYP classrooms. Additionally, observing the same classroom multiple times over weeks or at different points of the year was not possible. Thus the current data does not account for the complete description of each classroom but instead gives a snapshot of the classroom practices. The classroom observation summary is presented in four categories in the following tables. Though the data in the tables are succinct, some high and low scores are highlighted and discussed in each category/ indicator to bring attention to elements of instruction in PYP schools.

4.2.3.1 Analysis of Teacher's Role in Classroom Transaction

A total of 27 teachers from grade 1 to grade 6 participated in the classroom observations with more than three years of teaching experience in PYP. All the teachers under this investigation were IB-trained professionals.

The observation ratings under the category teacher as a facilitator in Tables 4.15, 4.16, 4.17 indicate the degree to which teachers' initiatives, activities and engagements in the classroom

reflect PYP classroom practices that included transdisciplinary teaching, inquiry learning, and reflective, collaborative teaching and learning etc.

Table 4.15

Teacher's Role in Classroom Transaction

Sl. No	Indicator	Mean	SD	Lo-Hi
1	Flexibility in adapting to the readiness of the students	4.9	0.82	Mid
2	Effective method adopted to engage pupil	5.7	0.95	Mid
3	Linkage with previous knowledge	6.2	0.87	High
4	Focus on the central idea	4.8	1.17	Mid
5	Appropriate teacher initiated questions	4.3	1.11	Mid
6	Adequacy and appropriateness of learning activities	5.5	1.01	Mid
7	Opportunities for students to inquire and explore within the planned framework	6.4	0.61	High
8	Allow Student initiated inquiry	3.2	1.56	Low
9	Effective scaffolding	6.0	0.79	High
10	Assignment of individual and group tasks	6.3	0.84	High
11	Redirecting students thinking	4.9	0.82	Mid
12	Consolidation of students' view points	6.3	0.74	High
13	Effectiveness of concept attainment	4.2	1.30	Mid
14	Opportunities to develop skills (as mentioned by IB)	5.5	0.68	Mid
15	Opportunities to explore the commonalities of human experience	5.0	0.85	Mid
16	Opportunities to demonstrate and develop learner profile attributes	6.5	0.57	High
17	Opportunities to develop higher order thinking	4.1	1.36	Mid
18	Opportunities to take action as a result of learning	4.9	0.82	Mid
19	Opportunities for students to apply the learning into their immediate environment	5.2	1.26	Mid
20	Creativeness in extending the learning into new situation	3.2	1.56	Low
21	Integration of ICT during inquiry teaching and learning (techno pedagogy)	6.2	0.81	High

22	Effective closure of lesson	4.7	1.57	Mid
23	Opportunities to reflect on learning	5.3	1.06	Mid
24	Relevant and effective assessment techniques	5.7	0.96	Mid

Teachers were highly observed to link the previous knowledge of students to the new concepts/ activities taught in the class. The highest overall mean value was observed in - teachers who provided opportunities to develop learner profiles, followed by opportunities for students to explore within the lesson's framework. The third highest mean value was teachers linking knowledge and consolidation of students' views in the classroom. Also, it was observed that the integration of ICT in teaching-learning was at a high level.

The data shows that the mean score for the teacher's role in developing higher-order thinking and application of learning in new situations is at a mid-low level. Also, the student-initiated inquiry is at a low level. The mid and low mean scores on these indicators suggest the improvement in these instructional areas of inquiry teaching and learning in PYP.

Pedagogical approaches were observed in all thirty classes, and the frequency of the observed type of pedagogical approaches is reported in table 4.16.

Table 4.16

Pedagogical Approaches in the Classroom

Pedagogical Approaches adopted	**Frequency/Percentage**
Chalk and talk method	5 (16.5)
Individualized Instruction	9 (29.7)
Demonstration method	3 (9.9)
Collaborative and Cooperative method	26 (85.8)
Activity based method	25 (82.5)
Play method	5 (16.5)

Inquiry method	19 (62.7)
Flipped classroom method	5 (16.5)

The data revealed that the most prominent pedagogical approach in PYP is the collaborative method, followed by the activity and inquiry method. Data also revealed that efforts were made to use flipped classes in five out of thirty classes observed. The chalk-and-talk method was least used in the classrooms observed.

Assessment techniques and tools used in the PYP classroom were captured in the classroom observation schedule. Assessment practices used by the teacher were recorded in frequency and percentages in all the thirty classes observed by the researcher and reported in table 4.17.

Table 4.17

Assessment Techniques and Tools Used

Assessment techniques	**Frequency/Percentage**
Performance assessment (oral presentation, debate, role play)	19 (62.7)
Process focusses assessments	7 (23.1)
Selected responses (paper pen test)	13 (42.9)
Open ended tasks	19 (62.7)
Portfolios	18 (59.4)
Self-assessment	5 (16.5)
Peer assessment	23 (75.9)
Assessment Tools	**Frequency/Percentage**
Checklists	23

	(75.9)
Anecdotal records	6 (19.8)
Rubrics	10 (33)

In terms of assessment practices, it was observed that various assessment techniques and tools were adopted in PYP classrooms. The most predominant technique was performance assessment through oral presentation, the paper pen test, role play etc. Portfolios, rubrics, open-ended tasks and anecdotal records were considerably used for assessment for learning. Additionally, peer assessment was adopted more significantly in PYP classes.

The type of interaction was noted and reported in all the classes observed. Frequency and percentage were calculated for each type of interaction observed in the classrooms. Table 4.18 presents the data and analysis of the types of interaction observed.

Table 4.18

Types of Interaction in the Classroom

Type of Interaction	**Frequency/Percentage**
No interaction	0 (0)
With student(s)- pedagogical	25 (82.5)
With student(s)- manegerial	30 (100)
With student(s)- social/personal	20 (66.6)
With student(s)- collaborative	25 (82.5)

The table above shows that the teachers in the PYP classrooms constantly interacted with the students. Different types of interaction were observed in the classroom. In most classrooms, teachers interacted with students for managerial, pedagogic and collaborative purposes.

Overall, the data suggested that pedagogical practices in PYP were mainly active, where teachers deliberately planned lessons to allow students to explore and construct their knowledge. Teachers were observed questioning, facilitating students learning through group activities, and explaining concepts and scaffolding whenever required.

4.2.3.2 Analysis of Taught Curriculum

This section offers low to high ratings on all indicators of taught curriculum, determining whether the content could extend to real-world application, take actions, and transcend between and beyond subject boundaries. The results of the analysis of taught curriculum are presented in Table 4.19

Table 4.19

Taught Curriculum

S.N	Indicator	Mean	SD	Lo-Hi
1	Content with global significance/ suited to all students with different cultures	5.7	0.95	Mid
2	Contextualizing the content to the level and background of students	5.7	0.95	Mid
3	Use of appropriate examples/ non examples	4.8	1.47	Mid
4	Present multiple perspectives on topic	3.5	1.72	Low
5	Establish linkage between, among and across different concept	3.3	1.69	Low
6	Establish linkage to the central idea of transdisciplinary theme	3.5	1.53	Low
7	Effective clarification of misconceptions	5.1	0.78	Mid
8	Effective integration of concepts across and beyond traditional subjects	4.3	1.86	Mid
9	Application to real world	6.2	0.86	High
10	Use of locally available resources	6.4	0.72	High

Contextualization of content to the level and background of students catering to the local and global demands was rated at a mid and high level. This indicated that lessons were carefully designed to make learning relevant for students from different cultural backgrounds by aligning them with the national curriculum.

To some extent, teachers provided multiple perspectives on each concept/ topic in the classroom. It was observed that teachers provided adequate opportunities through activities and home assignments for students to apply learning in the real world.

This section also revealed the incorporation of IB features in PYP classrooms. The indicators of transdisciplinary teaching were a) Establishing linkage between, among and across different concepts, b) Establishing linkage to the central idea of transdisciplinary theme, c) Effective integration of concepts across and beyond traditional subjects and d) Application to real-world promoting action. The indicators of transdisciplinary teaching-learning themes were rated mid to low in the classroom transaction process. The reason for the mid-low mean score on these indicators was substantiated by qualitative results, which highlighted the varied levels of understanding and practice of transdisciplinary teaching and learning. Also, it should be noted that lack of evidence or low rating for this indicator does not imply that teachers do not value this as a goal in PYP.

4.2.3.3 Analysis of Classroom Environment

The indicators in this section addressed the teachers' attributes and actions in creating a conducive classroom environment. It also included indicators of classroom management and classroom routines. Table 4.20 provides the mean, SD and rating for all indicators in the classroom environment. The results of the analysis of the classroom environment are presented in Table 4.20

Table 4.20

Classroom Environment

Sl. No	Indicator	Mean	SD	Lo- Hi
1	Engagement of students	6.0	0.93	High
2	Communication and confidence	6.6	0.63	High
3	Democratic environment in classroom	6.1	0.97	High
4	Inclusive learning environment in classroom	6.2	1.03	High
5	Collaborative learning environment	6.6	0.57	High
6	Inspiring learning environment in classroom	5.7	0.95	Mid
7	Meeting individual needs	5.7	0.95	Mid

8	Positive and negative reinforcement	4.9	0.82	Mid
9	Appropriate teacher questioning	5.0	0.62	Mid
10	Stimulus variation	5.7	1.12	Mid
11	Movement in the classroom	6.4	0.72	High
12	Ethical teacher behaviour	6.4	0.72	High
13	Comfortable seating arrangement	6.6	0.56	High
14	Grouping students as per the activity	5.7	0.95	Mid
15	Safe and positive environment	6.6	0.63	High
16	Freedom for students to question	6.0	0.95	High
17	Managing of internal and external disturbance	5.6	1.00	Mid
18	Establish routine to run the activities smoothly	5.4	0.93	Mid

Overall, the teachers' confidence, communication and ethical behaviour were rated high. The data demonstrated that PYP classrooms generally reflected a democratic, collaborative and inclusive environment. This result was further examined in the qualitative strand. Most of the research on inquiry-based teaching-learning highlights the importance of teacher and student questioning. The present data showed mid-level for appropriate teacher questioning. Further, an investigation into how teachers used questioning in the inquiry was done in the qualitative strand.

The high rating on the indicators (13, 15) related to classroom arrangement indicates that PYP classrooms are highly conducive in terms of infrastructure for collaborative learning. Similarly, the indicators (8, 10, 11, 14, 17 and 18) on classroom management were rated high, indicating teachers' confidence and competency in maintaining classroom discipline by adopting regular routines in the classroom. These indicators under the classroom environment are broader than specific for transdisciplinary, inquiry-based teaching. Thus, the above data reflected the general classroom environment in PYP classrooms. Field notes from classroom observations unveiled the specific practices for inquiry method and transdisciplinary teaching as espoused by IB.

4.2.3.4 Analysis of Students' Behaviour/Activities during Classroom Transaction.

Table 4.21 displays the result of students' behaviour and activities in the classroom. The indicators in this section addressed student engagement in inquiry learning. Various aspects like student questioning, responding, engaging in activity, and students' attitudes were observed, and the overall mean and SD were calculated. Along with this, ten learner profile attributes were observed during the classroom observation.

Table 4.21

Students' Behaviour in the Classroom

Sl. No	**Indicator**	**Mean**	**SD**	**Lo-Hi**
1	Listening to teacher	6.0	1.03	High
2	Responding to teachers question	5.8	1.03	Mid
3	Asking for clarification/ evidence/doubt/question without fear	5.7	1.06	Mid
4	Show interest in learning	6.2	1.10	High
5	Seeking for information	5.7	0.95	Mid
6	Share ideas with others	5.7	1.47	High
7	Responding to student ideas	5.7	0.95	High
8	Argument with other students	4.9	0.82	Mid
9	Working alone	4.2	0.94	Mid
10	Working with other students	6.0	1.02	High
11	Demonstration/ Experimentation/ Reading out own writing	3.7	1.12	Low
12	Summarises students discussion	4.2	1.59	Mid
13	Explaining the concepts	3.6	1.59	Low
14	Asking conceptual questions	3.1	1.11	Low
15	Asking higher order questions	3.4	1.30	Low

16	Challenging views/ ideas	4.0	1.16	Mid
17	Connecting learning to their real life	4.7	0.98	Mid
18	Creative response/ action	3.1	1.11	Low
19	Values and respects others' ideas, questions and contribution to the lesson	5.7	0.95	Mid
20	Reflecting on learning	3.8	1.19	Low

The results of the student behaviour and activities displayed in table 19 showed that students were observed to a great extent as engaged in classroom activities. They were rated high for showing interest and listening to the teacher. The data revealed that the indicators on collaborative learning (5, 6, 7, 8, 10,12, 16 and 19) show high-mid level ratings. The mid rating may suggest that not all the collaborative learning indicators were visible during the observation.

Only to some extent students were observed to be taking the initiative and assuming responsibility for their learning. This reflects learner autonomy in the classrooms is still emerging. The mean scores on the indicators for conceptual learning, application to real life, using higher-order thinking skills, and reflection were at a low level. Only a few students were observed using meta-cognitive skills and different ways to answer. The low mean scores on some of the indicators of student engagement in PYP classrooms strongly indicated the area for improvement in PYP classrooms.

It was observed that most of the students demonstrated consistent behaviour/ actions aligned with the Learner Profile attributes of communicators and inquirers. The attributes like principled, open-minded and caring were observed at the mid-level. Further investigation on the demonstration and challenges in developing these attributes are discussed in the qualitative section.

4.2.4 Outcomes of Quantitative Analysis

The quantitative analysis provided several significant insights into curriculum management in PYP schools. The results highlighted the general trend in perceptions of teachers on curriculum development, implementation, evaluation, and pedagogical leadership. The analysis allowed the researcher to compare teachers' perspectives by their years of experience in PYP and IB

professional development to determine whether there were statistically significant differences in their perceptions. The quantitative analysis also provided insights into students' perceptions on PYP schools and learning. The classroom observation results helped the researcher highlight the key curricular and pedagogic practices in PYP.

The outcomes of the quantitative study are presented below

Teachers' profile

- It was found that 92% of teachers were female with post-graduation degrees in different disciplines, and around 64% were trained professionals with B.Ed. Qualification.
- It was found that almost all participants had undergone IB professional development workshops, with the majority of them completing category 1 workshop.
- It was found that only 24% of teachers reported having IB certification in teaching and learning. And 40 % of teachers with international academic exposure.

Curriculum Development

- Majority (95%) of the teachers perceived that the Learner profile is at the centre of curriculum development; however, the response for sustaining learner profile attributes after PYP was diverse 30% of teachers indicated it is not sustained, 45% indicated it is sustained, and 16% were had a neutral response.
- It was found that the national curriculum is aligned with the PYP curriculum for the smooth transition from PYP to the national board.
- A majority of respondents reported that the written curriculum (POI) development is a collaborative process where teachers are encouraged to contribute to the development of curriculum and learning resources.
- It was found that teachers and the pedagogical leadership team develop written curriculum (POI), PYP planners and other relevant learning resources based on POI.
- Majority of teachers reported that the POI is revised regularly and teachers and parents are oriented before implementing the curriculum.

Curriculum Implementation

- Around 70% of the teachers perceived transdisciplinary teaching as relevant at the primary level and was feasible for teachers to implement; only 8% of teachers reported that this approach was challenging.

- A majority (90%) of teachers reported using concepts that address human commonality through transdisciplinary themes.
- It was found that a majority (90%) of teachers reported adopting inquiry-based teaching learning in the classroom as it is mandatory in PYP and actively assumed the role of a facilitator.
- It was found that teachers encouraged classroom questioning to promote inquiry and autonomous learning.
- It was found that teachers consciously integrated LP into classroom practices and collected evidence demonstrating Learner Profile attributes among students.
- Teachers reported the use of ICT for teaching-learning and assessment.

Curriculum Evaluation

- Most teachers (83%) affirmed that curriculum evaluation is mandatory during self-study.
- Majority of the teachers (90%) acknowledged the importance of self-study in their improved performance
- It was found that various stakeholders are involved in the self-study process.
- It was found that the teachers collect relevant data/evidence on various aspects of the curriculum, teaching-learning and student outcomes.

Pedagogical Leadership

- Collaboration was the critical element in PYP, where principals played a crucial role in fostering collaborations and communication by building trust among stakeholders.
- A majority of the participants indicated that leadership is distributed and teachers are encouraged to take leadership positions.
- A fair degree of teacher autonomy concerning making pedagogical decisions in the classroom and defining roles and responsibilities as indicated by the teachers.
- It was found that principals exercised transformational leadership to carry out various activities to improve teachers' performance and student learning.
- It was found that principals are actively involved in community development.
- Years of experience and professional development influencing the teachers' perception of curriculum development, implementation, evaluation and pedagogical leadership

- It was found that there was a statistically significant difference in the perception of curriculum development, curriculum implementation, curriculum evaluation, and pedagogical leadership by teachers with different years of experience in PYP.
- It was found that teachers with higher years of experience in PYP have a positive perspective on curriculum development, evaluation and pedagogical leadership
- It was found that teachers with category 3 professional development had a positive perspective on curriculum development, implementation and pedagogical leadership.

Students' Perception on PYP

- It was found that most students enjoyed the school experience and felt safe.
- Around 70% of the students indicated good technological resources and other co-curricular activities.
- It was found that around 65% of students felt confident and aspired to do better in the school
- It was found that most students enjoyed learning in school and were urged to do better in the scholastic subjects.
- Students indicated a positive attitude towards their teachers and noted that teachers provided personal care and positive reinforcement.
- Around 79% of the students indicated that teachers encouraged student questioning, and most students reported asking questions in the learning process.
- Most students indicated collaborative learning is prominent in the classroom, where they actively engage with their peers to learn.
- Students identified their behaviour/ actions with the attributes of the Learner Profile. The highest perceived attributes are inquirers and knowledgeable. Other attributes like balanced and reflection are still emerging in PYP.

Classroom Practices

- The most prominent pedagogical approaches were collaborative learning and inquiry-based teaching-learning.
- It was found that teachers provided opportunities to develop learner profiles in the classroom.
- Teachers were extensively observed linking learning to prior knowledge of students and consolidating multiple perspectives of students in the classroom.

- It was found that teachers adopted regular routines to create a collaborative and democratic environment. The data revealed that the confidence and communication of teachers were rated high.
- Data related to the physical environment of the classroom revealed that classrooms were well equipped with resources.
- Teacher questioning was rated at mid-level; however, teachers were found encouraging students to question during teaching-learning.
- It was found that the development of higher-order thinking and application of learning in new learning was at a mid-low level
- It was found that the content for the inquiry was aligned with the national curriculum and was contextualized to local demands and needs.
- The data revealed that the indicators for transdisciplinary teaching-learning were rated at the mid-low level. The indicators of transdisciplinary teaching were a) Establishing linkage between, among and across different concepts, b) Establishing linkage to the central idea of transdisciplinary theme, c) Effective integration of concepts across and beyond traditional subjects and d) Application to real-world promoting action.
- Teachers used various assessment tools and techniques in the classrooms. The most predominant technique was performance assessment through oral presentation, the paper pen test, role play etc. Portfolios, rubrics, open-ended tasks and anecdotal records were considerably used for assessment for learning. Peer assessment was adopted in a more significant way in PYP classes.

Students' engagement and behaviour in the classroom

- Students were found to be actively engaged in classroom activities and interested in learning.
- Data revealed that collaborative learning was rated at a high level, and individual learning was found at a mid-level.
- It was found that indicators for conceptual learning, application to real life, and higher-order thinking skills were low. Only a few students were observed using meta-cognitive skills and different ways to answer.
- Data revealed that the students were communicators and inquirers to a greater extent. The attributes like principled, open-mindedness, caring, and reflecting was rated at the mid-low level.

Challenges

- Lack of time and high parental expectations was identified as the most prominent challenge for the implementation of PYP
- Differentiated instruction catering to the needs of children with special needs was also identified as a challenge.
- Lack of experience was also reported as a challenge by most teachers. However, the demographic data on teachers' experience in PYP schools show that around 75% have experience in PYP between one to four years.

4.3 QUALITATIVE DATA ANALYSIS

A qualitative approach was adopted to expand the understanding of curriculum management in IB PYP schools using interviews, observation, and focus group interviews. Both formal and informal interviews with teachers, PYP coordinators, and principals gave a deeper insight into the practices involved in curriculum management in PYP. The classroom observations helped the researcher capture the classroom transaction and better understand the PYP practices of teaching-learning. The focus group interviews with students enabled the researcher to gain insights into their perception of school, teachers, and engagement in learning at PYP. This data also helped to substantiate some of the findings from classroom observations. The analysis addressed each research objective and is presented under mainly five categories: 1) Curriculum Development, 2) Curriculum Implementation, 3) Curriculum Evaluation, 4) Pedagogical Leadership, and 5) Students' perspectives. The observations from the classroom are integrated and presented under curriculum implementation.

Details of interview and classroom observation participants

Table 4.22 provides details of teachers who participated in interviews and classroom observations regarding gender, years of teaching experience in PYP, and IB professional development.

Table 4.22

Details of Teachers who Participated in Interview and Classroom Observation

Teacher number	Gender	Grade	Years of experience in PYP	IB Professional Development	Interview	Class Observation
T 1	F	3	9	Y	Y	Y
T 2	F	1	7	Y	Y	Y
T 3	F	6	7	Y	Y	Y

T 4	F	5	8	Y	Y	Y
T 5	F	6	10	Y	Y	N
T 6	F	2	10	Y	Y	Y
T 7	F	6	14	Y	Y	Y
T 8	F	2	8	Y	Y	Y
T 9	F	3	10	Y	Y	Y
T 10	F	4	4	Y	Y	Y
T 11	F	5	6	Y	Y	Y
T 12	M	4	4	Y	Y	N
T 13	F	5	4	Y	Y	Y
T 14	F	4	2	Y	Y	Y
T 15	F	1	5	Y	Y	Y
T 16	F	5	3	Y	Y	Y
T 17	F	5	10	Y	Y	Y
T 18	F	4	3	Y	Y	Y
T 19	F	5	9	Y	Y	Y
T 20	F	3	5	Y	Y	Y
T 21	F	4	8	Y	Y	Y
T 22	F	SKG	7	Y	Y	Y
T 23	F	1	11	Y	Y	Y
T 24	F	1	8	Y	Y	Y
T 25	F	4	3	Y	Y	Y
T 26	F	3	5	Y	Y	Y
T 27	F	3	6	Y	Y	Y
T 28	F	5	4	Y	Y	Y
T 29	F	2	8	Y	Y	N
T 30	F	5	10	Y	Y	Y

Almost all teachers were female except for one male. The years of teaching experience in PYP ranged from a minimum of 2 years to 14 years, 14 teachers with more than eight years, 12 with 4 to 7 years, and 4 with 1 to 3 years of experience in PYP. The participants represented almost all grades from Senior KG to grade 6, which made a good representation. All teachers had undergone IB professional development and were mainly reported to have completed Category 1 and 2 workshops. The PYP coordinators reported having more than eight years of teaching experience in PYP and four or more years of experience as a PYP coordinators. The two principals interviewed had almost a decade of experience in school education and was affiliated with the school from the inception of PYP the school. One of them was an IB evaluator in the South Asian region.

4.3.1 Curriculum Development

In the quantitative strand, an overall understanding of curriculum development was captured through the teacher perception scale; in the qualitative strand, the researcher aimed to bring out the detailed process of curriculum development, highlighting the social, cultural, political, and educational aspects embedded in it.

Several resounding themes emerged during data analysis that provided a detailed account of the interpretations of PYP principles and processes followed to develop the curriculum at the school level. The following section presents four broad themes that emerged from the data: 1) Transdisciplinary curriculum, 2) Collaborative practice, 3) Developing curricular documents 4) Steps of curriculum development.

4.3.1.1 Transdisciplinary Curriculum

PYP curriculum is based on a transdisciplinary framework where teaching and learning transcend beyond traditional disciplinary boundaries. All the respondents stated that they strictly follow the transdisciplinary framework to organize the content and teaching practices at the primary level. Teacher (3) explained, “There is flexibility to choose the content/topics under each theme. The PYP framework gets the school and teachers on board and helps the school to make decisions during curriculum development”. Highlighting the influence of the IB PYP framework on the school curriculum, principal (1) stated an example from transiting to the IB board, “We had started doing the thematic lessons, and we had sent our POI to the IB for an audit, the IB gave feedback saying the unit on oceans in grade …. is a thematic unit but not a transdisciplinary unit”, she exclaimed and said, “that was a great realization, and that is when we began our mission to make our units more transdisciplinary”.

Almost all teachers’ understanding of transdisciplinarity was rooted in the transdisciplinary themes provided by the IB PYP and their understanding of transdisciplinarity at the curriculum development stage as the integration of subjects under pre-set transdisciplinary themes. As a teacher (12) explained, “It (transdisciplinary) can have different layers and look different in the classroom; it is mostly to do with integrating subjects to understand the broader six transdisciplinary themes. In a similar vein, teacher (17) clarified transdisciplinary learning as integrated learning, “ We have six subjects (Language, Arts, PSPE, Social Studies, Science and Math) in PYP and we integrate different subjects under each TDT; Language is inherently integrated”. Further, teacher (21) described the integration of subjects within the transdisciplinary framework, “We see at the beginning where is the scope of integration of subjects into the transdisciplinary theme (TDT). It is a conscious effort put in by everyone to

try and integrate subjects under each theme". Principal (1) substantiated this with an example from her school's curriculum development process, "Since I knew the vertical and horizontal scope and sequence of the topics/concepts covered at primary, middle and high school level, I instinctively started integrating subjects under TDT…. Initially, I started with English and Social Science, Science I could bring in easily, but Maths I played it carefully".

When probed on how decisions were made on which subjects to integrate under each TDT, teacher (23) clarified that "It is not like we integrate all subjects in one unit (TDT), we have six units under six TDTs, so we integrate few subjects under one TDT unit". Agreeing with this, teacher (21) mentioned, "We try to see which subjects will go together, what subjects under TDT will help understand the particular theme or the Central Idea of the theme". PYP coordinator(2) validated the response provided by the teacher(21) about the integration of subjects in TDT units, " While we do the integration, we see if we are transcending two or more subjects, if yes, then we finalize this integration under that particular TDT". Almost all participants asserted that there is no forceful integration of subjects into the TDTs; teacher (1) expressed, "it is sometimes challenging to integrate subjects for some topics, mostly we find some connection to integrate, if not we teach that topic as stand-alone topics/subjects". Agreeing with this, another teacher (15) explained, "we have both transdisciplinary POI and stand-alone classes for disciplinary teaching. The subjects/topics that cannot be included in the POI, we teach them as stand-alone lessons."

While describing the transdisciplinary curriculum, most participants provided examples of units where subjects were integrated under TDTs. For instance, teacher (5) provided an example from the unit she was engaging, " In my grade, under the TDT 'Who we are, we have mapped human body topic, this is particularly a science topic…what we did was, we brought in the concepts of fractions, ratio and proportion from Mathematics. Here you see.. mathematics and science are integrated, and language is inherently integrated into it", she enthusiastically affirmed, saying, "see, that is how we make it transdisciplinary". Another example of subject integration was illustrated by the teacher (17), " we had a unit on 'matter' under how the world works TDT, here we had scope for introducing expository writings (from English subject) where students learnt how to report experiments". An example of art integration was given by PYP coordinator (2), "In the unit civilization under who we are TDT, students learnt about various civilization….. we integrated art into this theme, where students made jewellery depicting the ancient civilization jewellery and later they did sell it in the school which became CAS project".

During the discussion of transdisciplinary curriculum development, three teachers critiqued how transdisciplinary is perceived and practised in the schools. Teacher (19) critiqued the perception of the transdisciplinary curriculum in the schools, “For me, it (transdisciplinarity) is about speaking any subject anytime. It is necessary to have a smooth transition and natural flow from one subject to another subject, but here the shift is forceful as we have to integrate certain subjects into certain themes. We make a prominent shift from subject to subject as we are trying to fit different subjects to make the curriculum trans”. The comment of the teacher (28) was in agreement with the teacher (19), “In most units, we are not focusing on the natural flow of subjects in and out of the inquiry here. POI is very academic where we map content with National curriculum and then integrate subjects within the transdisciplinary themes while doing, some of the integrations are not natural although we do not force integration.” Further teacher’s (16) response provided a better understanding of the critiques highlighted by other teachers, “ I feel the broader idea of IB in introducing the transdisciplinary themes was to guide the inquiry of real-life bigger problems or issues where students can take action. This demands a choice of topics/concepts which has broader scope for the free flow of subjects into it, in most of the PYP schools, they stick to the national syllabus which is technically disciplinary”. Further, teacher (19) highlighted the concern around transdisciplinary curriculum development in PYP schools, “What is happening is that the schools take up IB, tries to understand it superficially- to do POI, but not dwell into the crux of the philosophy of transdisciplinary curriculum. They understand in one way and start developing their curriculum and plans. The maturity is not seen in the POI or the learner profile development. They (teachers/schools) think they have understood in one workshop (…..) many connections are forced into the curriculum (…) Schools like this (international schools) should be able to integrate all the subjects naturally whenever it is required than to try and fit into the NCF”. These insights highlighted the reality of transdisciplinary curricular practice in PYP schools. To sum up, the responses illuminated the tension that exists in the school in balancing the forces from IB mandates and the national education system and parental expectations.

Integrating Learner Profile in the Curriculum

Another aspect that emerged was the integration of the IB Learner Profile (LP). All the participants gave LP a central stage in PYP as they considered the outcome of all the teaching-learning in PYP to be the development of LP. Principal (2) expressed the level of influence LP has on the school, “we organize our curriculum, leadership practices and entire school practices around LP….it is at the heart of our school philosophy”. Almost all teachers pointed out that

they plan the curriculum around the development of LP. One teacher (6) said, “it is not just a guiding force for curriculum development, it also guides us to develop these attributes in life”. The teachers identified specific learner profile attributes to be focused on in each unit. It was noted that mentioning specific learner profile attributes helped the teachers to develop attributes among students consciously.

4.3.1.2 Collaborative Practice

Collaborative practice was a crucial element in the curriculum development process, according to all the participants in this research. The collaborative practice that assisted in arriving at a common and mutually agreed curriculum was evident in each participant’s response. Teachers highlighted discussions, debates, negotiations, and collective consensus as key elements in the collaborative practice. All teachers acknowledged that collaborative practice was the key to good curricular practice. Teacher (21) outlined the advantage of collaborative planning, “Most of the good plans are due to collaborations. For example, in the unit Mass media, ICT was pretty easy for us to integrate, and physical education (PE) was something we struggled to integrate with mass media… Suddenly somebody in the team came up with an idea- we can have a match, in that way we can integrate PE and advertise it, doing logos, sending invites..”. Most teachers pointed out the advantage of technology in collaborative practices, and most teachers used open-source platforms like google drive to share their planners and ideas with the rest of the team.

Teachers illustrated the discussions and negotiations during the collaborative meetings. Teacher (23) explained with an example, “when we are finding the scope for integration, we ask all the subject specialists to read and share their perspective in the meeting, and we have an in-depth discussion on whether to integrate and how to integrate subjects to the central idea. Since we have teachers with varied experiences, the discussions are illuminating to make connections across the subjects and within the subjects… our understanding also expands”. PYP coordinator (1) described how she negotiated during the curriculum development, “there are some teachers who kind of get into a lengthy discussion of how much depth the inquiry should go, whether the unit is trans or interdisciplinary. I tell them- ‘Let us make it simple for everyone and split down the entire process of POI into small steps’… I negotiate with the teachers to develop a POI which is practically feasible, not just good on the paper”. In support of the negotiation process, PYP coordinator (3) asserted, “it is important to hear out the teachers’ perspectives and then come to a common conclusion, this helps them take ownership when they conclude rather than me imposing my ideas”. Clearly, discussions, negotiations, and

collective consensus were key elements in the collaborative practice that facilitated an effective curriculum development process in PYP.

Actors Involved in Curriculum Development

The stakeholders involved in the curriculum development process are the principal, PYP coordinators and teachers. Almost every participant expressed that the principal involves in curriculum development and supports teachers through various degrees of participation. As a teacher (2) stated, “although the principals are not the ones who directly implement the curriculum, they influence what goes into the curriculum”. PYP coordinator (1) continued the teacher’s (2) thought and stated, “ Principals set the expectations and make the key decision on POI and lead the POI”. This is supported by the principal’s (1) response, “For me, the curriculum is important every year, I sit through the complete development of POI, and I have the responsibility to decide on what content should be integrated into the POI”.

All the participants acknowledged that the role of the PYP coordinator is crucial in POI development. They perceived them as the bridge between the teachers and the principals, where they brought a balance between the principal’s expectations and the teacher’s perspectives. As a teacher (3) states, “We look up to PYP coordinators to resolve any doubts during the development of POI, we closely discuss with her to finalise the POI”. Teacher (18) supported this statement, “She (PYP coordinator) is the one who mainly attends workshops and brings the knowledge to the table; she listens to all our perspectives and helps to consolidate our ideas”.

Teachers were seen as essential actors in the curriculum development process. Teacher (3) considered teachers as active participants in the curriculum development process: “As a senior teacher, I hold the responsibility to contribute well for the development of POI. I also think we (teachers) have a better understanding of the practical curriculum”. Adding to this, the teacher(26) asserted the importance of teacher involvement in POI, “Sometimes the heads, coordinators are not aware of the practical problems in integrating subjects in the transdisciplinary curriculum, that is when the teachers’ experience comes to play, and this helps to make POI effective for implementation. The PYP coordinator clarifies that not all teachers are involved in the curriculum development process; only the senior teachers who have an in-depth understanding of the IB philosophy and curriculum are involved.

Few teachers brought out the negative influence of teachers on curriculum development; for instance, a teacher (16) commented, “Some teachers do not read enough, they are not aware of

the depth and breadth of the transdisciplinary themes, they look at one angle and try to expand only based on that, this is reflected in the POI and limits the POI". Teacher (19) expressed that after attending the IB workshops, teachers think they have understood everything …. and try to do the POI based on their limited understanding but do not try to expand their understanding". The participants' responses established the influence of teachers (positive or negative) on curriculum development in PYP.

4.3.1.3 Developing Curricular Documents

The schools are expected to develop various curricular documents to implement PYP successfully. In line with the PYP mandates, the schools develop written documents which are considered as written curricula that serve as a guiding document for the implementation of PYP in the school. In developing the written curriculum, the school follows general guidelines to make the curriculum relevant and effective. The key considerations from the interviews were: age appropriateness, clear learning outcomes, and balance in subject integration in the curriculum. All participants identified age appropriateness as a key to the effective implementation of POI. As a teacher (3) stated, "Once we decide on the broader topics under TDT units, first we start looking at what the students in this age group can learn, how much they should learn, what action can we expect." Teacher (18) continued, "Once we know what we can expect from that age group, we state clear learning outcomes, and we work with an end in mind". With these general guidelines, the school developed mainly two documents that are to be considered as written curriculum: 1) Program of Inquiry (POI) - a comprehensive written curriculum in line with the transdisciplinary curricular guidelines provided by IB, 2) PYP planners that support the implementation of POI and used mainly by teachers. Along with this, learning resources are developed by school/ individual teachers to support the implementation of POI. The following section discusses each document's elements and the steps involved in developing these documents.

Program of inquiry (POI)

The schools are expected to develop a comprehensive curriculum that aligns with the requirements of the PYP (IBO, 2009): a) The programme of inquiry consists of six units of inquiry—one for each transdisciplinary theme—at each year/grade level except students who are 3–5 years, where the requirement is at least four units at each year/grade level, two of which must be under "Who we are" and "How we express ourselves". b) The school ensures a coherent, horizontally and vertically articulated programme of inquiry c) The Primary Years

Programme exhibition is one of the six transdisciplinary inquiry units in the programme's final year.

The programme of inquiry is a matrix made up of the six transdisciplinary themes running vertically and the age groups running horizontally. In each cell of the matrix, a unit of inquiry (UOI) is documented that is age appropriate. Each UOI consists of a central idea (CI), a line of inquiry, and critical concepts. Common steps in developing POI were identified with some variations.

- Step 1: Understand the descriptors for each transdisciplinary theme. All the curriculum development team members discussed and clarified the descriptors for each transdisciplinary theme.
- Step 2: Choose topics/ concepts under each transdisciplinary theme and formulate Central Idea: The first step is identifying content in the national curriculum and PYP scope and sequence document to include in the PYP curriculum. After the content selection, they are mapped under the transdisciplinary themes. As the PYP coordinator (1) mentioned, “We have big boards where we put down topics from CBSE, ICSE, State board, IB scope and sequence, and we map under each TDT. Once the topics are chosen, the central idea is formulated”. PYP coordinator (3) described the character of the central idea as - timeless, open-ended, not vague, non-judgemental, not opinion based and has scope to take actions- maybe now or ten years later”.
- Step 3: Integration of subjects: Once the topics/concepts are chosen, and central ideas are formulated, subject integration is done. During this integration, the team discussed which subjects could be brought together to expand the understanding of the central idea. Most of the participants mentioned that they keep aside maths topics and do the integration for the rest of the subjects, once other subjects are integrated, maths integration is done. As the principal (1) clarified, “When we integrate mathematics topics, they are the topics they (students) already know, no new maths will be taught in that unit. Clarifying maths integration, teacher (3) noted, “we have a stand-alone lesson to teach the maths concepts”, teacher (4) supported this with an example, “in the unit with the central idea on water, we integrated Venn diagram from math. The students had already learned different graphs like Venn, bar, and pictograph; in this unit, we only integrated the Venn diagram concept”. Almost all participants noted that 80% of the topics are integrated into the transdisciplinary POI, and the rest is addressed in stand-alone classes.

- Step 4: Unpacking the central idea- line of inquiry. The line of inquiry aims to clarify and develop an understanding of the central idea under each TDT. All participants noted that there are three to four lines of inquiry in statement form, and the last line of inquiry is always related to the action students have to take/will be able to take as a result of the inquiry. Some teachers noted that the last line of inquiry is formed so that it is connected to the next unit. However, this connection of units through lines of inquiry was not shared by the majority of participants.
- Step 5: Integrating PYP elements (concepts, Learner profile attributes, and skills): The curriculum development team worked on integrating relevant concepts in each unit of inquiry, and it was made sure that all eight concepts were covered in each age level. The teachers identified specific learner profile attributes to be focused on in each unit. It was noted that mentioning specific learner profile attributes helped the teachers to develop attributes among students consciously. Similarly, specific skills were highlighted in each unit to give impetus to those particular skill learning.
- Step 6: Horizontal and vertical alignment: The team checked for the balance of social and science topics across themes in each grade. They also looked for the balance of all PYP elements across the units of inquiry at each grade level- this is considered horizontal alignment. The team checked for the developmental progression under each theme in the vertical alignment review. Once the review is done, the team finalises the POI with central ideas in each unit of inquiry.

Once the POI is reviewed, it is distributed among the PYP team. Teachers in each grade and their head or instructional coach prepare PYP planners to implement each UOI. There was a variance in the constitution of the curriculum development team and who was involved in what phase. In common, it was seen that the principal, PYP coordinator, instructional coaches, some senior teachers from PYP, and one or two from the Middle year program were involved in developing POI to identify the topics and central idea. In one school's phase of unpacking the central idea, the team formulated the lines of inquiry and integrated PYP elements; in two other schools, they decentralized this task to grade-level teachers and their instructional coaches/ team leaders.

PYP Planner

Teachers develop PYP Planners to guide the implementation of POI. PYP planner is a nine-stage planner with questions that guide the teachers to plan and organize teaching-learning embedded in an inquiry-based approach. All the teachers perceived PYP planners as valuable

documents for planning specific teaching-learning for each unit of inquiry. Further, they asserted that the planner helped them to reflect and improve their performance, as the teacher (7) noted, “PYP planners are most important for teachers; this is where we plan every learning engagement, activities for each unit”. In one school, the PYP planner was developed by the curriculum development team and was given to teachers for implementation. PYP Coordinator (1) expressed the concern stating, “we want all the teachers to do their planner, but are they ready to do it? Do all teachers have the commitment and competency to do it? We cannot risk this. Thus, we plan till the micro level”. In other schools, the PYP planner was developed by grade-level teams and then distributed among all teachers. Some teachers expressed their concern about teacher autonomy, teacher (19) expressed, “As a teacher, I know my children better, and I want to plan things differently. Since we all (all grade level teachers) have to be on the same page, we are bound to follow the PYP planner developed by the team”. Adding to this, teacher (11) mentions that “in my previous school, teachers had the freedom to do their planner, here we have to follow a particular planner. However, I try to modify based on the requirements of my class”. In common, PYP planners were developed to support the implementation of POI. It was seen that autonomy in developing the PYP planners varied in schools, given their reasons.

Learning Resources

IB requires the schools to use various learning materials to support transdisciplinary and inquiry-based teaching-learning. It was seen that the IB schools had a range of resource books that were utilized in the inquiries. Many participants reported that they developed their learning materials in line with the unit of inquiries. Some of them shared the learning materials they used in the classroom, including resource books, graphic organizers, reading material extracted from books/the internet, and books from the library. Principal (1) proudly mentioned the book she has developed to facilitate inquiry learning under the transdisciplinary curriculum, “…we did not use textbooks, we looked at the central idea and used a range of learning material and graphic organizers to drive the inquiry…we identified the content, and I wrote it, it is a passion for me”. Future researchers can explore learning materials developed in the schools that support the PYP curriculum.

4.3.1.4 Processes of Curriculum Development

According to the participants, a common perception about the curriculum development process was that curriculum development in PYP is a cyclic process involving specific steps. Each participant described almost the same steps in the process and essentially in the same sequence

with only minute variations in the approaches. The collective sequence of processes is described in the following section.

The pedagogical leadership team convenes: The first step involved getting the entire team together. In common, the pedagogic leadership team consisted of principals, PYP coordinators, subject specialists, Instructional coaches/team leaders, and senior teachers from PYP and Middle school. Teachers stated that the principal mainly decides on choosing teachers for the team. Teacher (12) highlighted the value of the first step when he stated, “It is in this meeting we set the tone and expectations for POI development, teachers share their new ideas for the POI”.

POI development and review: As discussed in the previous section, POI is developed by considering IB standards and practices and aligning with the national curriculum. The team reviews the previous year’s POI to understand the success and limitations of the POI. Teachers’ experience in implementing POI and students’ responses during this phase are discussed. Once the POI is developed, it is reviewed for horizontal and vertical alignment.

Orientation and training of teachers: Once the POI is finalized in the team, it is shared among teachers of all grade levels of PYP and preparations are made for teacher orientation. As PYP coordinators stressed, orientation and training of teachers are imperative for the successful implementation of POI. PYP Coordinator (1) described teachers' training: "the main task in implementing PYP was to transform subject teachers to homeroom teachers who can handle all subjects. This process took us a long time, but it was possible with continuous professional development”. In agreement with this, PYP coordinator (2) stated, “new teachers are trained for almost a year before they start classroom teaching; they are paired with senior teachers to understand the PYP practices.

Orientation to parents: All participants indicated the importance of the orientation of parents regarding PYP practices. Principal (1) described how the school-oriented and sensitized parents on PYP, “For parents, PYP was very new; they were concerned as there were no subject-specific classes, so we oriented parents before admission and before the beginning of the academic year”. Adding to this, principal (3) shared her approaches, “We give constant updates on student’s learning and how they learn in PYP, there is much information given to the parents to understand the philosophy of IB and their role in students learning.”

Development and review of Unit of Inquiry and PYP planners at grade level: Once the POI is finalized and shared among the teachers, collaborative planning begins to develop each unit of

inquiry and PYP planner at each grade level. In some schools, this is done by the pedagogical leadership team, and in other schools, it is done by the grade-level teachers and their heads. Before implementing each UOI in the classroom, the PYP coordinator reviews the UOI and PYP planner to ensure the relevance and feasibility of implementation. PYP coordinator (3) shared her review process, "I check if the learning outcomes are realistic, if the learning engagements are feasible in a certain age group, sometimes teachers plan activities, where they are explaining the activity for 20 minutes and child does the activity for 10 minutes..is the activity worth doing?… I review each and everything thoroughly and send my comments". In support of the review process, PYP coordinator (2) stated, "The review of UOI and PYP planner is crucial as they contain the specific learning engagements and strategies; this decides the effectiveness of transdisciplinary inquiry teaching and learning in the classroom." All participants noted that reviewing UOI and PYP planners is a year-long process. During the review process teacher gather all the resources needed for the inquiry.

While the data supported the curriculum development process in PYP as a set of processes the schools follow, it is not always sequential. As PYP coordinator (2) elaborated, " I think the process of curriculum development in PYP is not as straightforward as it seems to look; there are other unknown variables and factors that affect the process." In agreement with the coordinator, teacher (11) expressed her anxiety in curriculum development, "PYP has many elements, it is complex, sometimes it is overwhelming to integrate all PYP elements, come up to the school's expectation, parents' demands and our limitations …it challenging". PYP coordinator (3) pointed out a back-and-forth review in curriculum development, "the steps are not linear, we sometimes go back to the POI and reframe the Central idea when we find it challenging to implement in the classroom. The review of UOI is always continuous, and we try to bring in suggestions from the teachers and students to modify our next strategies".

In summary, the participants consistently identified specific processes involving various actors for the curriculum development in PYP; they also acknowledged the influence of unknown variables that can alter the processes.

4.3.2 Curriculum Implementation

This section provides qualitative findings on curriculum implementation in PYP. The investigation was around the pedagogical practices in PYP. The pedagogical practices in the PYP are guided by the inquiry-based teaching-learning embedded in the constructivist learning theory.

The practice of inquiry is enfolded in the transdisciplinary curriculum, where the six themes are considered worthy of inquiry regardless of the age of students (IBO, 2007). The students inquire into the six transdisciplinary themes through various key concepts, and the IBO proposes that including these concepts in the curriculum supports the inquiry structure. PYP also points out that the five essential elements- knowledge, concepts, skills, attitudes, and action needs to be interwoven into the inquiries while considering the developmental needs of the students at each grade level.

The following findings were obtained from interviews and classroom observations that paint a picture of teachers' perceptions and practices on curriculum implementation in PYP. Four broad themes- 1. Transdisciplinary curriculum in practice, 2. Inquiry practices in PYP, 3. Learner Profile implementation, 4. The teacher's attitude and role provide a detailed account of the curriculum implementation in PYP.

4.3.2.1 Transdisciplinary curriculum in practice

All participants identified the transdisciplinary Program of Inquiry as the guiding document in PYP, and they affirmed that the POI provided a framework to conduct specific inquiries in the classrooms. The most common understanding of transdisciplinary curriculum in practice is about the integration of subjects. As most teachers perceived transdisciplinary teaching as integrating two or more subjects under one transdisciplinary theme, teacher (19) explained, "For me its about speaking any subject anytime. Smooth transition and natural flow from one subject to another subject". Adding to this, PYP coordinator (2) provided an example, "In one of the history lessons, students learnt about the past and linked to the present. They performed a play in drama and made jewellery in art classes". Adding to this line of practice, teacher (11) shared an example from her class, "In the lesson body parts, we wanted the students to understand the BMI and other concepts related to body parts. We brought in the math here, where they collected the data, did calculations, and understood BMI- this was math integration in a science topic. Under the same topic, we brought creative writing from English, where we asked students to do reflective/ creative writing about the body parts they associate with". Most teachers expressed that integrating subjects helped students understand that knowledge is interconnected.

Another general understanding of transdisciplinary curriculum in practice is related to making connections. All the participants perceived that the critical component of transdisciplinary teaching is making constant connections. Teacher (3) asserted that the PYP transdisciplinary

framework provides students with opportunities to understand that everything is connected. Many teachers believed that making connections concretized the knowledge of the child. It was observed from the data that the participants had different approaches and lines of thought for making connections. The most common line of connection which emerged was the connection to real life. PYP coordinator (3) asserted that transdisciplinary teaching helps students apply their knowledge and skills in real life; she further noted, "We give real-life situations while teaching, and show them how different subjects are related, this helps them use these different subject knowledge to deal with the real-life situation". In addition, teacher (12) explained, "In PYP, we make students understand what this learning means to them in real life. For instance, in grade 4, we had an inquiry on measurement. Children understood what is meant for them in real-time- they measured the length and height, and comprehended measurement". Exemplifying the importance of real-life connection in PYP, teacher (11) stated, "Students in the PYP should be able to see and make connections with real-life".

Most participants perceived transdisciplinary learning as the ability to apply knowledge and skills to various disciplines. Teacher (28) provided an example to describe transdisciplinary learning as the application of knowledge and skills to other disciplines, " In the PYP exhibition this year, students have chosen science and technology, and they are inquiring into how science and technology are applied in architecture, medical field, sports etc.....…(…).. If we remove the transdisciplinary aspect from the curriculum, it would be hard-core science learning where students would learn laws and principles in isolation; in trans, we see the application of these laws and principles in different fields. Applying what they learn in real life is happening in PYP."

Most of the connections made by teachers were related to applying knowledge and skills of one subject to various fields/disciplines. It is essential to observe that only a few teachers (2 teachers) mentioned making connections to bring out the human commonality in learning which lead to informed action in the world. Reflecting on the current practice of transdisciplinary teaching-learning, teacher (11) wondered if the PYP students would be able to see connections across the subjects as she pointed out, "In transdisciplinary teaching, our major focus is on building on one subject and seeing the application of the concepts and skills in other fields/subjects... It is the future of IB that students, when they grow up, really see the connection across subjects and say I like the math in it; I understand the science in it……now I am not sure if this connection across subjects will be sustained throughout IB education as the curriculum in MYP is interdisciplinary and disciplinary in DP" further, she stated, "we are

the first generation of IB teachers; the next generation may bring this kind of transformation of really seeing the connection of different subjects within a context/concept".

All the participants believed that PYP teachers should be competent to teach the transdisciplinary curriculum and develop the ability to make connections across and beyond subjects, within inquiries, and to real life. Teacher (28), affirming the role of teachers, pointed out, "teachers should be convinced and clear on what is transdisciplinary learning, how to take the students in the transdisciplinary learning journey. You know, students just like that do not connect the dots right… we should know from the roots how the topics and concepts are connected. It is a teacher's role to keep connecting the learning to the central idea, different things in different disciplines…they (teachers) should not leave them (students) to themselves thinking they will automatically connect the dots… we need to make connections". Agreeing to this another teacher (3) made a firm statement, "If the teacher fails to make the connection to the main themes and different things around, it will look like a CBSE classroom with a different methodology. The teacher must make students see the connection between and within inquiries".

4.3.2.2 Inquiry Practices in PYP

All the participants supported student-centric inquiry teaching-learning in PYP and believed that the inquiry approach promoted thinking among students. Most participants perceived that inquiry was the best approach for learning at the primary level as it allowed students to foster their curiosity and facilitated the construction of knowledge. The participants highlighted key characteristics of inquiry teaching and learning, which are presented below.

Key characteristics of inquiry-based teaching-learning

Age appropriateness:

All participants highlighted the importance of age-appropriate inquiries in PYP. Teacher (6) noted, "95 % of planned inquiries work as it is age-appropriate, the topics or the inquiry questions are according to their age, and this is the most important aspect for inquiry to happen". The early-year teachers mentioned that the inquiries should be short and according to age, as their attention span is significantly less. While asserting the importance of age-appropriate inquiries, teachers also pointed out that the inquiries need to be challenging and exciting. Some teachers used the term 'child-friendly' inquiries while discussing the key characteristics of inquiry teaching-learning.

Building on students' prior knowledge: In line with the constructivist learning theory, the teachers planned all the inquiries based on students' prior knowledge. Almost all teachers believed knowledge construction was more important than knowledge acquisition at the primary level. Most participants acknowledged that the inquiry in PYP is a journey from known to unknown and that students constructed their knowledge in the process. Teacher (28) supporting the knowledge construction stated, "When students acquire knowledge through construction, the understanding is clearer, deeper and sustained". Sharing her experience, teacher (2) explained, "I first understand their convictions and then try to build on that; I sometimes challenge their understanding by giving examples and non-examples". A snapshot from the classroom observation demonstrates how students moved from known to unknown.

Students were asked to read about the change in states of matter from the Big science book. After reading, the teacher asked the students to reflect and write/ orally tell what they did not know and what they knew after reading. Here are some of the students' responses

S1: I never knew gas could turn into a solid; now I know it is possible

S2: When matter changes from one form to another, the molecules do not change. They move away that is all

S3: how a solid can turn into gas? I did not know.

S4: every process has a name to it; every transformation has a name

S5: they have different properties and behaviour in different states

S6: atoms divide when they get transformed

T: check once more, see the diagram and read properly.

The teacher consolidated all students' responses on a mind map on the blackboard.

This activity enabled the students to move from known to unknown. The students could identify the new concepts they had learnt through this activity.

Most of the students during the focus group, when asked about teaching-learning in PYP, noted, "They (teachers) give us activities as per our knowledge as they ask us what we know about the topic and then teach us simple things, they do not jump into higher things, they see what we know and then they teach us".

Real-life connection:

All the participants emphasized real-life connections in the inquiry process. Many participants shared that they plan learning engagements to connect the learning to the real-life context of students. For instance, in one of the classes, the teacher, after discussing the architecture in ancient civilizations, asked the students to compare it with present-day architecture; the following excerpt from the classroom observation illustrated real-life connections during the inquiry.

> S1: explains civilization. They explain the architecture and the materials used….The bricks were of the same shape and size.
>
> T: what analysis can be drawn from this information on bricks?
>
> S2: people were killed, and they were good at it. …continues to explain the architecture- the houses in the Indus civilization had the window toward the courtyard to avoid the dust and noise of the street.
>
> T: so now imagine this class was in Indus civilization time. What is the difference? Or is there any difference? Apart from the material used, tell me other things
>
> S: no, madam, no difference
>
> S: yes, madam, the difference is the window is not towards the courtyard; in our class, it is towards the street.
>
> T: appreciates. Tell others to improve their imagination and analyse it in a better way.

In the above example, the teacher uses a comparative hook to help students understand the history and relate to their context, like a classroom. In a similar approach, teacher (16) stated, "While we inquire about the past, like ancient civilization, I connect the past with the present; that is the connection we are looking for here. Real-time reflection and comparative hooks are important when I inquire into civilization. This makes sense for them to learn about civilization and history in general".

It was evident from the interviews and classroom observation that teachers constantly connect to students' real-life contexts.

Concept-based learning:

All the participants perceived that the PYP framework helped foster conceptual learning among students. The IB's articulation of concepts extensively guided the perception and practice of

concept-based learning. IB proposes eight concepts (form, function, causation, change, connection, perspective, responsibility, and reflection) that are transdisciplinary and can be integrated into any context under any transdisciplinary theme. Almost all noted that two or three concepts are focused in each unit of inquiry, and by the end of the year, students would have gained an understanding of all eight concepts. According to most participants, concepts provide a lens to learn anything. PYP coordinator (1) stated that "concepts are like universal solvents; you can learn anything using the conceptual lens". From the participants' responses, there emerged two approaches for conceptual learning in PYP- deductive and inductive approaches. In the deductive approach, teachers explicitly introduced and explained the concepts and then provided various examples of each concept. In the inductive approach, the teachers start with examples of a particular concept and arrive at the concept's name and description.

Most teachers expressed that teachers play a crucial role in fostering conceptual understanding. Stressing the role of teachers, teacher (3) stated, "I am very particular to reinforce the concepts time and again in my class. I make the students understand which conceptual lens they are using to learn any topic". Supporting the reinforcement, teacher (4) noted, " If you do not talk about the concepts, it is just there on the poster- 8 key concepts- form, function…. whenever I get a chance, I talk to them about the concepts, and they do not forget it to look at it with the lens of concepts". Teacher (21) suggested using posters in the classroom to remind students to constantly use the conceptual lens for learning.

Activity-based learning:

Activities were an essential aspect of PYP, where students engaged in group and individual activities in different phases of the learning journey. All the participants supported activity-based learning as they believed the activities kept the students interested and engaged for a longer time in the learning process. Most participants reported that they devised age-appropriate activities that are challenging and interesting for students. Teachers used activities for different purposes and in different phases of learning. For instance, many teachers reported using activities to tune in to a specific inquiry to make students interested in the learning topic; some used them while developing students' understanding of the topic, and others reported using activities for assessments.

Some of the senior teachers expressed their concern about the extensive use of activities as the teacher (16) expressed, "Sadly, we are missing out on this rigour of learning the concepts as the teachers do not know the clear objectives of why they are doing the activity, they are not

marrying the concepts with the activities, they are in the flashy mode, and do not know what they are arriving at". It can be implied that teachers hold a crucial role in activity-based learning to make learning meaningful for the students.

Differentiated learning:

Most participants stated that differentiated instruction and assessment are inherent in an inquiry-based approach as it focuses on individual learning. Some teachers noted that an inquiry-based approach to teaching helps children with special needs and gifted children as it allows them to learn at their own pace. Most teachers reported understanding students' learning styles, difficulties, and talents at the beginning of the academic year to plan teaching-learning accordingly. As PYP coordinator (3) mentioned, "We collect anecdotes and portfolios from the previous grade about each student and make a diagnosis of who needs what kind of learning engagements, the learning objectives are same as given in the POI and planner, and we modify the learning engagements/activities and assessments". Almost all teachers reported using differentiated instruction and assessment in the classrooms. It is evident from the data that resources and teacher readiness are essential factors for differentiated instruction and assessment in PYP.

Autonomous learning:

Most participants believed that children are naturally curious to learn new things and that they should be allowed to learn by themselves. Teacher (21) stated, "Preparedness of a learner is important in inquiry; only the active learners can make the best of inquiry as they have to drive the inquiry; we are there to facilitate their learning journey". It is evident from these responses that students need to be nurtured from an early age to become active and autonomous learners. Most participants perceived that providing student ownership and importance to students' voices in learning helped students to engage deeply in the learning journey. Teacher (5) enthusiastically shared an example to describe autonomous learning in her class, "We had a unit on body systems, under the TDT- who we are. We showed a video, and we gave a flow chart. They had learned by themselves. We did not teach; they started learning by themselves. We did six body systems. We gave them a chart, told them to interconnect the systems, and gave them pictures. They started drawing arrows and wrote descriptions of the body parts, and they even reflected on - what would happen if this system did not work, what would happen, and what would be affected. All these came out as their understanding and learning. We could see that they were coming out with better answers compared to the class where we taught them".

Collaborative learning:

Most teachers supported collaborative learning through group activities at the primary level, as the PYP coordinator (2) noted, “In peer learning, all students are involved. The silent and the shy students are not left out”. Supporting peer learning, the principal (1) stated, “in a group, every child feels validated. At this age, validation is essential, and that is the reason we focus more on peer learning”. Group activities were commonly observed in the classroom practices; however, for different purposes, some were used to gather information and some were related to assessments. Developing a culture for group activities was considered an essential aspect of collaborative learning. Teachers affirmed that they had built a culture of working in groups early on. Teachers’ role was important in making collaborative learning effective—teachers engaged with students during the group activities for managerial and pedagogical reasons.

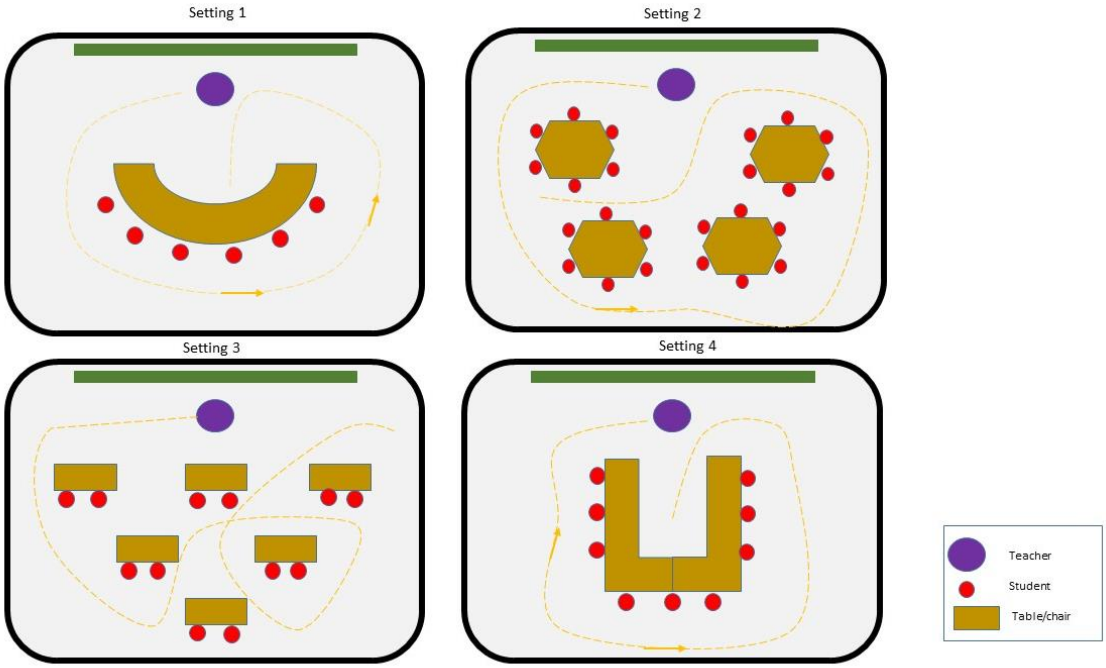
Classroom environment

The classroom environment was considered important to support PYP curriculum implementation by most of the participants. The classroom environment is related to both physical and pedagogical environments. Teachers were viewed as key contributors in building a conducive environment in the classrooms. Teachers believed that their attitude toward students, convictions on IB philosophy, and competencies shape and influence the classroom environment. Many teachers shared that they followed a routine and planned strategies to build a culture of inquiry and collaboration. Teachers recognized that substantial time was required to build a good classroom environment that fosters inquiry.

Regarding the physical environment, the classrooms were spacious and had flexible seating arrangements. Most of the classes had seating arrangements conducive to group activities. The seating was arranged so that teachers could move all around the classroom, giving access to every student group. It was also observed that the teachers changed the seating arrangements in a class for activities. Figure 4.12 depicts the typical classroom seating arrangement in the PYP classes observed.

Figure 4.12

Classroom Arrangement



All the classrooms were full of visuals of posters of IB essential elements- key concepts, transdisciplinary themes, IB Learner Profile, school's mission and vision statement, basic etiquette, and classroom management rules. Each class had a space to display students' work, and some of the classrooms had a space called 'Wonder Wall' where students posted questions and their curious thoughts. In one of the classrooms, they had a space to post burning questions where students wrote the questions necessary for an inquiry. Participants from the early years highlighted the importance of visual stimulation for learning. The teacher (25) shared, "we change the whole classroom look for each theme; we want children to be curious when they see these things in the classroom". Adding to this, a teacher from primary years noted that the visual display of the Learner Profile, key concepts and reflective starters helped them constantly reinforce these concepts in the class.

Another key aspect of the classroom setting in PYP was the different resources available within the classroom. Most classrooms had an in-house library, and students were seen reading books in their leisure time. Early years classrooms were equipped with manipulatives and toys in the corners of the classroom. Teacher (22), while showing her classroom explained the corners they had created, "We have inquiry corners in class, Eg for the TDT- who we are, we are

teaching safety and healthy habits, we have kept flashcards, first aid. Once they go to the corner, they ask questions and explore by themselves, and we guide them further".

Some teachers expressed that the technology needs to be within the classroom and expressed the managerial and logistical challenges in getting technology into the classrooms, "The classroom should be well equipped with technology; we have a separate computer lab where students can access computers/internet. There is a procedure to get the iPads and gadgets into the classroom, which is time-consuming each time". Overall, a conducive classroom environment was created by teachers by mobilizing resources and building a culture of inquiry learning in the classroom.

Inquiry Cycle

All the participants subscribed to inquiry teaching and learning at PYP and used specific approaches to conduct inquiries based on the POI. All participants perceived inquiry as a cyclic process involving various stages that guided students through a meaningful learning journey. Almost all participants identified similar stages of the inquiry cycle in line with Kath Murdock's inquiry cycle, with some variations in the terminology and sequence of the stages. Typically, one inquiry cycle takes about 3-5 weeks in PYP. The collective sequence of the inquiry cycle is described in the following section.

1. *Tuning-in:* It was identified that the tuning-in phase is the initial phase of the inquiry journey. Almost all the participants considered this phase important as they tuned the student to the topic of the inquiry. In this phase, most teachers reported doing prior knowledge assessments to understand students' thinking about what they already know and make it visible to them and the entire classroom—tuning phase, as noted by most of the participants, involved powerful provocations in engaging students in the inquiry with an emphasis on exploring the known.
2. *Driving the inquiry*: This stage overlaps with the tuning-in phase; however, this was considered a separate stage as most teachers repeatedly identified 'driving the inquiry' as the next step after unpacking the central idea. In this phase, the teachers elicited perspectives from students on the central idea to further focus on the pre-decided lines of inquiry. Students were allowed to share their perspectives on the central idea/ broader concept of inquiry, and from their perspectives, teachers narrowed down the inquiry to a specific line of inquiry. Various strategies to elicit the expected line of inquiry were found during the classroom observations.

3. *Finding out*: In this phase, teachers planned various learning engagements to involve students in gathering new information through structured investigation and research. Teachers reported devising exciting and creative learning engagements, as the PYP coordinator affirmed, “When we plan the learning engagements, we ask ourselves- are our learning engagements making students wonder, question, find evidence….”. It was evident from the classroom observations and interviews that teachers used various strategies and approaches to facilitate students in investigating new concepts within the inquiry.
4. *Sorting out:* This is a crucial phase where students engage in analyzing, drawing conclusions, making meanings and connections, identifying patterns, sharing their learning and moving towards a deeper understanding of the concept. Teachers noted that students assess their understanding and arrive at conclusions in this phase. As many teachers identified, students in this phased process the information they have found and made meaning collaboratively. Many teachers perceived that group activities helped the students to interpret their findings and review and revise their understanding collaboratively. Teachers reported providing various choices to students in how they process information and communicate the new learning, like graphic organizers, drawing, PPT presentations, essays etc.
5. *Going further:* In this phase, teachers provided more responsibility to students to expand their inquiry. Some teachers used the ‘wonder wall’ to extend the inquiry outside the classroom. Students posted questions and ideas on the wonder wall for further exploration, and teachers supported this extended inquiry. This phase is a key component in supporting the students to expand their learning and apply skills and knowledge in a more personalized context. During the classroom observation, it was found that some teachers followed up on individual student inquiries based on the inquiries at the school.
6. *Reflecting and Acting*: Almost all teachers emphasized the importance of this phase, as action is the outcome of the inquiry process. Most devised specific activities and used strategies to engage students in reflection. Participants noted that reflecting on learning is not reserved only for the end of the inquiry but is an essential component in the entire inquiry process.

The participants gave the element of action in the inquiry high importance. They perceived that the action might occur at any time and to any degree. While most of the teachers believed that

inquiry led to meaningful action in the real world, not many provided examples, and some of the teachers expressed that the action element in PYP should be more visible in real life; teacher (14) expressed her concern, “I would like to see the action among students, we had a theme called Zero Hunger- my daughter studies here, when we travel in the flight, she sees there is so much wastage of food, I would have liked to see her take action, to do something about it”. These responses suggest that the action element in PYP is evolving, and further investigation is needed for an in-depth understanding.

Role of language in inquiry

Language plays a vital role in inquiry as it is the medium in which students construct meaning and communicate their understanding with others. In the PYP schools under the study, English was used as a language for inquiry. Interestingly, although the students' mother tongue was not English, most were comfortable understanding and communicating in English. Only in a few cases, teachers expressed that students who did not have an English background at home found it difficult to engage in the inquiries, and the school gave extra support for English language learning. This implies that for a successful inquiry in PYP schools in India, the students need to have a good hold of the English language, which is highly dependent on the background of the parents and family.

Role of parents

Almost all participants felt the role of parents in PYP is crucial. Many teachers expressed that Indian parents are used to shouldering all the responsibility of student learning on the school and teachers; they expressed that parents need to be proactive in PYP. Teachers expressed that most parents do not encourage questioning, critical thinking and taking ownership which can hinder inquiry. Teacher (22) from early years stated, “Parent’s support is essential for inquiry to happen, especially in lower grades. They need to give them free hands at home to explore and not restrict them”. Many participants felt the need to train parents to support students learning in PYP. Teacher (19) shared her viewpoint: "Here, parents are not trained and oriented rigorously on what kind of support is expected of them. Parents have a sensitive role, you know… they need to understand the thin difference between monitoring and telling. They need to monitor what that child is learning/ doing but not tell things”. Further, she stressed the importance of parents knowing what inquiries are conducted in school to expand the learning of students, “Parents, if they are updated with the inquiries happening in the class, they can have dinner table talks, long drive talks on similar lines and a lot come from the home”. Teachers strongly felt that parents need to provide quality time to their kids and align with the

philosophy of inquiry to bring out the best in the students. Only a few participants mentioned that the workshops were conducted for parents to orient them to the PYP way of learning.

4.3.2.3 Learner Profile Implementation

IB Learner Profile was the focus of curriculum implementation. All participants perceived that the outcome of the inquiries in PYP led to the development of Learner Profile attributes among students. Teachers had specific strategies and approaches to implementing Learner Profiles in their classrooms. A common understanding of how the LP was implemented in the PYP was derived from interview responses and classroom observations. All participants stressed using Learner Profile vocabulary to introduce the ten attributes. At the beginning of the academic year, teachers explained the importance and meaning of each Learn Profile attribute to the students. Teachers reported discussing the attributes regularly in the school to familiarize students with the LP. Principal (1) expressed that the overplay of LP in the school and using the Learner Profile words have helped students internalize LP attributes. Some of the examples from the classroom observation illustrate the explicit use of LP words- 'Teacher- If you are open-minded, you will listen to your friends while doing the activity, 'which LP attribute are we focusing on now?', 'Very good, Karan, this shows you are principled'. Teacher (26) explained her approach to LP implementation, "— I give many examples in their language (age appropriate) to explain the ten learner profile attributes; I tell them what it is, why it is important and how it helps in personal life". It was observed that each unit of inquiry had two or three LP attributes in focus, where teachers gave stress on developing these attributes in that unit of inquiry. Many teachers expressed that students developed LP attributes by modelling the teachers, so demonstrating these attributes among teachers was highly important. In the same lines, teacher (2) shared, "For me, LP is for lifelong learning, I make efforts to develop these attributes in me, and I know this will influence my students as well". Some of the experienced teachers expressed that their understanding of learner profiles was limited among the teachers. The teacher (19) expressed, "The understanding of the profiles is not getting matured and is not manifested in their real life. Students who come for grade 5 understand being principled is only being honest; teachers have to give students a wide range of examples of each profile". Teachers expressed that they needed more information to deepen their understanding of LP and specific strategies to develop LP among students in different age groups.

Observation of LP attributes played a crucial role in the PYP. Teachers had devised activities to observe the LP attributes. For example, in this activity, teachers used an LP bank in the classroom; the teacher added the names of the students who demonstrated a specific attribute

to that category. At the end of the week, the teacher announced which students had demonstrated the highest LP attributes. This strategy is also used for peer observation, where the peers observe each other, make a note of it, and discuss it in the classroom. Most teachers expressed that they constantly observe the students to identify any of the LP attributes. Collectively they perceived that observation helped in LP implementation in the PYP.

Reinforcement was perceived as an essential strategy to develop LP attributes among students. Participants believed that student behaviour could be formed and changed through proper reinforcements. Teacher (8) supported this idea, "When I see any student demonstrating LP, I come and quote the example in the classroom, and that inspires and they become more conscious about their behaviour" another teacher (15) provided an example of how negative reinforcements helped, "Sometimes after developing the attributes also they tend not to follow, so we tell them we put a sad smile in their portfolio". Adding to this, teacher (1) highlighted the timing of reinforcement, "reinforcing students at the right time- when we observe is very important, that is when they know what is valued and what is not, this motivates them to demonstrate the desired behaviours". All teachers used appropriate reinforcement to motivate students to demonstrate LP attributes.

Reporting the development of LP is one of the major aspects of student assessment in PYP. Teachers, students and parents do the report. Teachers maintained anecdotes and observations to report each student's development on LP attributes. Students also assessed themselves and reported on their understanding and demonstration of LP. Teachers mentioned that checklists and surveys were sent to get feedback from parents on their ward's development of the LP attributes.

Overall all the participants perceived that the development of LP attributes is a lifelong process and can be developed through an iterative process involving discussion, demonstration, observation, and reflection.

4.3.2.4 Role of Teachers in Curriculum Implementation

It is well established that the role of teachers in teaching-learning is seminal. All the participants acknowledged the role of teachers as highly important in successfully implementing the PYP curriculum. Teachers need to be familiar with child learning, be responsive to the needs of the individual students and be aware of the cultural and social contexts in which the students learn. In PYP, teachers are expected to adopt an inquiry approach to teaching-learning to facilitate knowledge construction. Several themes emerged on the roles and attitudes of PYP teachers

that provide an insight into the kind of teacher profile required to implement the PYP curriculum.

Attitude and attributes:

Every participant highlighted the requirement of a positive teacher attitude towards inquiry to implement the PYP curriculum effectively. Teachers in PYP had to align with the inquiry philosophy where both teachers and students are learners. Reflecting on the traditional teacher's attitude in the Indian context, principal (1) noted, "Traditionally, teachers want to have control; they are in a powerful position in a classroom, here it is different, teachers are guiding and facilitating. For the Indian mindset, it is difficult"; further, she asserted that a paradigm shift was needed to make PYP work in the school. In a traditional classroom, the assumption is that teachers are at a high level who knows everything and delivers the knowledge to the students who lack knowledge. This idea is challenged by the student-centric inquiry approach, where teachers and students share equal responsibility in learning. Supporting this idea, many participants noted that teachers in PYP are primarily learners; for instance, teacher (5) stated, "In inquiry, both teachers and students are learners" adding to this, teacher (4) affirmed, "We are learners as teachers- this attitude is important for inquiry. I tell my students it is not that I know and you do not know. I tell them we all are lifelong learners and that is how I keep up the spirit of inquiry". Highlighting the change in the mindset of PYP teachers, PYP coordinator (2) expressed, "Teachers mindset is important here, she has to be curious and open to ideas. The inquiry is killed if she thinks what she knows is everything". Further, some participants emphasized learning, unlearning and relearning in PYP.

All participants believed that teachers in PYP need to have LP attributes and assume themselves as lifelong learners. Principal (1), stressing teachers' attitudes, shared her approach to recruiting teachers for PYP, "The management recruits teachers who are caring and smart than teachers who are extremely good at content". This suggests that well-rounded teachers are effective and required in PYP.

Apart from the LP attributes, participants stressed on flexibility, preparedness, and resourcefulness of teachers in PYP. Teacher (12) called the inquiry classrooms dynamic and changing, where teachers need to be flexible to adapt to the needs of the students and classroom context. Teacher (15) shared an example, "When I open the central idea, the students might have a different understanding, sometimes they do not have the prerequisite knowledge…then I change my entire plan, and I am flexible in my classrooms; this helps me a lot..". Teachers stated that flexibility comes with the teacher's preparedness. Teacher (19) commented on the

current state of preparedness among teachers in PYP, “Many teachers do not read and come to class. They do not have a deeper and broader perspective/ understanding of the topic of inquiry. If they know the depths and breadths, they will be able to steer their conversations, provocations, and questions to focus on the inquiry”. Agreeing to this, teacher (1) stressed teacher’s resourcefulness, “If a teacher does not have enough knowledge about that topic, it is difficult to guide the inquiry further, so I think teacher need to be resourceful and well planned before taking up the inquiry”. Many participants used IB blogs, libraries and online resources to prepare for inquiry classes. All the PYP coordinators shared that they provided resources for teachers to develop the knowledge and skills required for effective PYP implementation.

Another aspect highlighted by most of the participants was reflective teachers. Participants used reflection at various stages of inquiry- before, during and after. Most of the participants noted that reflection is embedded in their daily teaching-learning. Some teachers reflected in groups and conducted structured reflective sessions on weekends. They perceived that these reflective sessions helped them perform better in classrooms.

Teacher as a Facilitator

The role of teachers in PYP is to facilitate students in connecting their prior knowledge to new knowledge through meaningful experiences. In PYP classrooms, teachers actively assume the role of a facilitator to promote autonomous learning among students. Almost all teachers strongly felt that they played the role of a facilitator in inquiry, as expressed by the teacher (4), “we do not teach them, we make them come up with their understanding, we provide them with many learning opportunities”. It was observed that facilitation in PYP classrooms was seen in various forms and degrees. In some classes, teacher-initiated questions and activities were evident in a specific phase of the inquiry, and in some classes, student-led activities and discussions were evident. From this, it can be noted that teacher provides a different level of freedom to students based on the phase of the inquiry cycle. Supporting this, teacher (12) mentioned, “There are levels of inquiry and various degrees of inquiry. My role depends on what stage of inquiry I am in. I sometimes facilitate, give the front load when expert input is required, and sometimes let the children take the lead”. In most of the classroom observations and interview responses, participants stressed knowing the learning journey of students in order to facilitate inquiry learning in the classroom. For instance, teacher (15) shared, “I listen to the students, and I am with them in their learning journey; I know where they are at their understanding, then I facilitate accordingly”. In some of the classes, teachers were found monitoring the students in learning, asking them questions to know their line of thinking and

helping them focus on the objectives of the inquiry. In most classes, teachers guided the students, bridging the learning gap, clarifying misconceptions, and scaffolding them in their learning. As facilitators, teachers were observed using various reinforcements to encourage students to engage in the inquiry.

Many teachers expressed that an additional teacher in the classroom supported them in facilitating all students in inquiry. In some classrooms, an extra teacher engaged a group of students/ individual students to support them with learning. In general, all participants valued the inquiry model for learning and played the role of a facilitator by creating opportunities to support student inquiries.

Student-Teacher Relationship

Participants emphasized positive student-teacher relationships for successful inquiries in PYP. They asserted that PYP teachers need to provide a safe and secure environment where students feel valued and respected. Since inquiry stresses student initiation and autonomy in learning, teachers felt that the students need to trust their teacher to share their opinions and perspectives in the class openly. Teacher (3) firmly believed that inquiry can be successful with the trust between student and teachers and was reflected in her words, “when the new batch comes in, I first start understanding my children and we develop mutual trust. When my children know I will not scold them if they question or give wrong answers, they are more comfortable in sharing their thoughts..”. Supporting this, teacher (11) suggested, “teachers need to believe in students that they can learn, when we express this, students are ready to take responsibilities”. Most of the participants stressed on the language and tone of teachers used in the classroom, as the teacher (17) mentioned, “Sometimes students are wrong, you have to correct them but not condemn them. The teachers need to use words very carefully in the classroom. If the child feels suffocated, there can be no inquiry in the classroom”. Overall, all teachers appeared to have a positive relationship with students and made efforts to build trust with and among students.

4.3.3 Curriculum Evaluation

Curriculum evaluation in this study is the process in which the school investigates the process and outcome of the curricular and pedagogical practices planned during curriculum development. The qualitative analysis investigated how the schools evaluated the PYP curriculum and student assessment. The themes that emerged from the qualitative analysis are 1) Self-study, 2) IB audit, and 3) Student assessment.

4.3.3.1 Self-Study

Self-study is the most critical aspect of program evaluation by IB, and it is a requirement by the IB for the schools implementing PYP. The researcher identified common practices involved in self-study in the schools under study and discussed them in the following section.

According to the respondents, the self-study process is a mandatory process carried out by the school to ensure the program's quality. All the participants perceived that self-study helped in increasing the accountability of teachers and schools in implementing PYP. Most of the teachers perceived it was vital as it helped them to reflect on their practices. Teacher (4) explained, "In the self-study, we (teachers) focus on teaching-learning, reflect on how it was implemented and rate ourselves" agreeing with this line of thought, teacher (8) assertively said, "we are quite honest during this process, the outcome of the self-study has always helped us perform better".

All the participants reported self-study is a collaborative process for over 12-18 months. All the stakeholders- school head, principal, PYP coordinators, team leaders, teachers, non–teaching staff, students, and parents involved in the process. The typical steps described by the participants are presented below.

Step 1: Planning self-study

IB provides standards and practices for the schools to ensure quality in implementing the program. The PYP program standards and practices provide a set of criteria against which IB schools have to evaluate the success of the implementation of PYP. In the present study, the component of the curriculum in self-study was investigated. In all the schools under the study, self-study was handled by PYP Coordinators, and they were the key persons in preparing the school community for the self-study process. All participants noted that planning for self-study required collaboration and focused meetings with the teachers.

In the meetings, the program standards and practices were discussed at length, and teachers were assigned to explain to the team what the standards mean and what evidence demonstrates compliance with that standards. In the meeting, the PYP coordinator questioned the teachers to know their understanding and clarified any doubts about the standards and practices provided by IB. Along with discussing the standards and practices, the PYP coordinator reviewed the previous evaluation report and highlighted the commendations and recommendations to be addressed in the current year. PYP coordinator (3) expressed her role as crucial in self-study as she explained, "It is my responsibility to bring all teachers on board, some understand it, but for some, it is overwhelming. I had to make teachers understand what each standard and

practice mean by giving several examples". Further, she added that the IB standards were further narrowed down to help teachers understand the essence of each standard. PYP coordinator (1), in support of this practice, added, "We have developed our own set of indicators alongside IB indicators to help our teachers for the self-study".

Highlighting the importance of collaborative meetings, the teacher (17) expressed her view, "It (Self-study meetings) is like a study circle. We understand the whole practices of PYP from multiple perspectives, and it helps to understand the whole of PYP; we need not study the whole document all by ourselves, the sharing helps a lot to better our understanding of the standards and practices". All teachers felt they shared responsibility in conducting the self-study and contributed enthusiastically to the entire process. During the planning step, teachers were grouped to gather evidence on particular standards.

Step 2: Gather supporting documents

Teachers held a vital role in this step as they were the ones who directly implemented the program and had a better understanding of the practices. All the teachers noted that they collect evidence based on the standards and practices. Most of the teachers mentioned that they collect evidence regularly; in the words of teacher (8), "We record what we do based on the standards. Every year we document our work, the year we do the self-study, we do more focused documentation, but we do the documentation every year". Teachers reported collecting various evidence on philosophy, organization, and curriculum aspects, including pictures, hard copies of documents, digital documents, video recordings and a few anecdotes. Specific to the curriculum, teachers documented the POI, Planners, floor plans (meeting agendas), learning materials, learning engagements, student work, visuals from classrooms etc. Teachers expressed that the division of work in documentation lessened their burden as each teacher was responsible for collecting evidence on one or two standards. It was observed that the schools have a specific way of managing the documentation; for instance, PYP coordinator (3) mentioned they had a tracking file system for each category based on the standards at each grade level and one at the PYP level; another coordinator had a category wise filing system. Once the documentation was done, the PYP coordinator called for grade-level meetings to sort and review the evidence and documents. PYP coordinator (3) found this step very important and stated, "Sometimes teachers get confused and add evidence in the categories which are not relevant, I ask the grade level leaders to the first review, and then I review them". All the participants acknowledged that collaborative sessions are crucial in sorting and reviewing documentation before moving to the next steps. It has to be noted that according to the IB

mandates, evidence is gathered from parents along with other stakeholders; only one PYP coordinator mentioned they had specific questionnaires to collect data from parents; however, this aspect did not come to the highlight during the interview.

Step 3: Complete the self-study questionnaire

The IB provides the schools with a self-study questionnaire based on the standards and practices; the schools are required to complete the questionnaire with supporting documents and submit it to the IB. The PYP coordinators in the study expressed the support they get from the IB in the self-study process. PYP coordinator (2) stated, "We were new to the whole process, the IB sent us some exemplars for conducting self-study and completing the questionnaire". The questionnaire was completed as a team, with PYP coordinator in charge.

Step 4: Submit a self-study questionnaire and prepare for an evaluation visit

The submission of the questionnaire was through an online IB portal, the schools attached all the supporting along with the questionnaire. Once the self-study questionnaire was submitted, the IB evaluated and planned for the IB evaluation visit. The PYP coordinator considered IB evaluation a big thing, and they prepared for almost a year before the evaluation visit". Many teachers expressed that discussions and mock evaluations were of great help for teachers as they boosted their confidence.

It is important to note that the teachers perceived the self-study process positively. When asked if it was a burden/ challenging to teachers, the common response was – 'We are prepared and document regularly along with our teaching'. This showed the preparation and readiness of teachers in the whole process, teacher (6) pressed the role of technology in lessening the burden as she stated, "a few years ago we did the whole PYP planning and documentation on paper and shared manually, now with technology this has become easy and efficient".

In summary, the participants positively perceived the self-study process as it helped them improve their performance. There was a consensus on the steps followed in the self-study process, reflecting IB's strong regulatory forces on schools.

4.3.3.2 IB Evaluation Visit

Once the school submitted the self-study questionnaire with supporting documents, the IB visited the school to verify its assessment of its implementation of PYP. The purpose of the visit was to verify the assessment carried out by the school to ensure the PYP standards and practices were followed and sustained.

All the participants shared a positive experience with the IB evaluation visit. Principal (1), while discussing the IB visit, stated, “The best thing about IB evaluation visit is that they do not inspect you. In Indian boards generally check the documentation, but IB visits include an in-depth assessment of academic plans; they interview teachers and students and observe the classes”. In agreement with this, the PYP coordinator (3) perceived that IB evaluation is better than the CBSE evaluation as she stated, “In CBSE evaluation they do not check the pedagogical practices, the evaluation criteria are not curriculum and pedagogy specific, but IB requires the schools to document and demonstrate student-centric practices, the evaluation visits check all of this”. The IB visit typically takes 3 to 4 days, during which two or three IB officials visit the school and conduct an evaluation. Teachers shared their experience of the IB visit as a learning experience; teacher (25) expressed, “ I was interviewed during the visit, and they asked about how I do differentiation in teaching, what is an inquiry cycle, how I strategize group activities. They made us feel very comfortable during the interview”. Another teacher provided details on the process involved in the IB visit, “On the first day, the evaluators reviewed all the policy-related documents and supporting documents for PYP implementation. After the document review, they go for classroom observation and interview students, including a few from MYP. They interview the management, principal, heads and also parents”.

After the evaluation visit, the IB sends the school a report based on the analysis of the self-study questionnaire, supporting documents and school visit. Participants reported that the report had three aspects, 1) commendations- related to outstanding or innovative practices, 2) recommendations- guiding further development of the program, and 3) matters to be addressed- these are the areas that are not in compliance with IB standards and practices. Most participants perceived that the IB report helped the school validate its practices to improve the PYP implementation. This is reflected in the teacher’s (27) response, “The IB recommendations and commendations motivated us; we were happy that we were on the right track”. Further, principal (1) explained the action plan they developed based on the IB report to improve PYP practices at school, “IB had provided recommendations in the area of student assessment and evaluation. We sent teachers for workshops and started digging into the area of assessments. We understood what was missing, and we brought various assessment practices in our PYP”. Another example was provided by the PYP coordinator (3), “We had recommendations in the area of thinking, IB provided us with valuable feedback and also suggested an action plan. We then incorporated a lot of thinking-related activities across the PYP.”

The self-study as an internal mechanism for quality assurance and the IB audit as an external evaluation mechanism ensures the quality of IB PYP schools.

4.3.3.3 Student Assessment

Student assessment is a critical aspect of curriculum evaluation. Assessment involves the gathering and analysis of data about students' understanding and performance that can inform practice. Assessment practices in PYP identify what students know, understand, can do and feel at different stages in the learning process (IBO, 2009). The student assessment in PYP is discussed under three areas, 1) assessing, 2) recording and 3) reporting.

Assessing

Assessing is related to how teachers discover what students know and have learned. In the PYP schools under the study, summative assessment (SA) and formative assessment (FA) were prominent. Teachers perceived the summative and formative assessments had different purposes, as the teacher (13) shared, "while summative assessment focuses on what students have learned as a culmination of teaching-learning, the formative assessment focuses on the ongoing learning". Teachers believed that summative assessment provided opportunities for students to demonstrate what they have learned by the end of an entire unit or semester. Teachers reported using formative assessment for several purposes. FAs were interwoven with learning to understand what students already know (prior knowledge assessment) and what the understanding is in the learning process. Teachers also used FAs to plan the next stage of learning. Most teachers strongly perceived that regular feedback during the FAs promoted student learning. Some of the teachers noted that FAs helped teachers and students reflect on teaching-learning.

Teachers provided information on what is assessed and how teachers decide what to assess. The set of age-specific learning outcomes under each unit of inquiry drives the content/area of assessment. The assessment in PYP focused mainly on three areas 1) Knowledge, 2) Skills and 3) Action. Teachers mentioned that they review the topics/concepts under each unit of inquiry-lines of inquiry to categorize the learning outcomes further in terms of what is worth being familiar with, worth knowing, and worth enduring. Based on this categorization, teachers decided what to assess in each unit. Stressing the skill and action elements of learning, many teachers asserted that they plan assessment activities to assess students' skills and actions. Teacher (4) described the assessment of an action in PYP, "we look for student's action in PYP, sometimes the action might be immediate, and sometimes it might take time; we have action

timeline that helps us capture the actions of students throughout the learning journey". Adding to this, teacher (3) noted that they focused more on skill development in PYP than knowledge acquisition and reproduction.

All participants supported assessing Learner Profile in PYP. Most teachers described their use of LP as immersive, interweaving the vocabulary throughout the learning. As the teacher (30) stated, the learner profile is not formally assessed but is reinforced whenever the concepts arise within and outside the classroom. While most of the teachers were assessing Learner Profile attributes, some experienced teachers pointed out the challenges in conceptualizing progress on Learner profiles within a grade level and across PYP. Teachers and coordinators supported the idea of a continuum to guide them with the assessment of the Learner Profile.

In assessing what students know and can do, participants pressed on differentiated assessment practices in PYP as they believed each student is unique and expressed in their ways. Differentiation in assessment was seen in two types; one provided different ways to express their learning, and the other provided different levels of assessment based on students' ability and learning journey. Several teachers shared examples of the first type of differentiation. Teacher (25) shared her differentiated practices, "In the unit Food chain, I gave them a choice to express their understanding through an essay, mind map or presentation". Adding to this, teacher (6) shared her approach, "last year, I had a child who had writing difficulty, so I took oral assessments, recorded his verbal answers and assessed his learning". The second type of differentiation was evident in classroom practices; it was observed during a mathematics class; students were asked to solve problems on profit and loss, and the teacher provided different problems (based on difficulty level) for different sets of students. The same teacher in the interview explained, "I know which students are in what level; I prepare different levels of questions/problems beforehand and give them in the class, this saves my time, and my students feel confident when they can answer". While asserting the importance of differentiation, teachers also expressed that it was challenging to practice robustly due to time constraints and their limited scholarship in differentiated teaching and assessment.

Most participants reported the administration of standardized achievement tests and other types of assessments in PYP. Principal (1) explained the reason for choosing standardized testing, "Our school is a national school where most of our students enrol into national schools after PYP, that is why we preserved national curriculum and used external testing- Asset exams

which are based on national curriculum syllabus". Other schools mentioned they utilized school-developed achievement tests and other forms of assessments.

Recording

Recording is an essential assessment aspect related to collecting data about student learning using relevant assessment tools and strategies. Teachers perceived that a firm grasp of evidence is required to assess students' knowledge, skills and attitudes growth. Teachers described a rich array of assessment tools and strategies used in PYP. Most of the teachers confirmed they announced the criteria for assessment to the students before any assessment was done.

Participants reported using several tools such as checklists, paper pen tests, rubrics and anecdotes. Most of the teachers were found using anecdotes to record learner profile attributes. Rubrics were widely used in peer assessment. Teachers mentioned various strategies used for assessment, the most common was the observation, where teachers observed the class as a whole or/as an individual student. They perceived that observations were embedded in their teaching and helped them plan. While discussing differentiated assessment, many teachers mentioned using multimodal performance assessment, such as assessing students through role-plays, storytelling, and drawing. However, very few mentioned using open-ended tasks like essays for assessments. All the participants supported the activity-based, play-way approaches to assessment; as a teacher (24) from early years states, "we need to make assessments fun and interesting for children, especially in early years, we always weave the assessments into activities". Most teachers noted that they provide students with the opportunity for self-assessment and peer assessment. Although peer assessment was used commonly in PYP, some teachers were sceptical about the validity of such assessments and expressed concerns about their effects on students.

Reporting

Documenting and reporting students learning was accorded importance by all the teachers. The most common strategy for documentation was portfolios and reflective journals. A portfolio is a record of students learning designed to demonstrate the learning journey, development and exemplary work of students. Most teachers noted that the portfolios were prepared in collaboration with students. In some cases, students chose the pieces of work they wanted to showcase, and some teachers did it. The learner Profile is highlighted in the portfolio. It was gathered from the interviews and observation that portfolios are mainly used for reporting students learning.

Reflective journals were also widely used in PYP, where students played a crucial role in keeping a reflective journal. In the reflective journal, students reflect on their understanding and report it in their own words. It was observed that after every class/concept, teachers reflected prompts to encourage students to think and reflect on their understanding, which the students documented in the reflective journal. Most teachers believed that these journals give a better understanding of students learning, and some reported using reflective journals for formative assessment.

Teachers prepared written reports to share students learning with administrators, parents, students, and teachers. The report included learning on PYP elements like Learner profile, transdisciplinary units, and subject-specific performance. Most teachers reported that the principal reviewed these reports regularly and provided feedback for improved learning.

Use of technology in assessment

The use of technology was an important aspect that emerged from the data. The primary use of technology was in the area of student individual assessment. Teachers reported using online assessments using google forms and other platforms. They perceived that it helped them save time in collecting data and grading. Some participants mentioned that they have started using e-report cards and hard copies and expressed that the report cards should be completely digitalized.

4.3.4 Pedagogical Leadership

Pedagogical leadership is identified as one of the critical components in curriculum management. The IB defines pedagogical leadership as the effective management of resources-people, time, and money—to ensure the enhancement of teaching and learning to address the school's overarching mission (IBO, 2009). The schools implementing the PYP program are expected to shape their leadership based on the standards and practices mandated by IB. This requires the schools to make structural changes where leadership practices mirror team leadership. Given that leadership, practices are sensitive to the context in which they are exercised (Leithwood, Jantzi, and Steinbach 1999), contextual factors, both internal and external factors, shape the activities of school leaders. Broad external factors include the national education system, social, cultural, and economic development, parental expectation and IB mandates. Internal factors include teachers, students and school management. In this section, the pedagogical leadership practices in PYP are described in terms of the pedagogical

leadership team's leadership models and roles, highlighting the influences of external and internal factors.

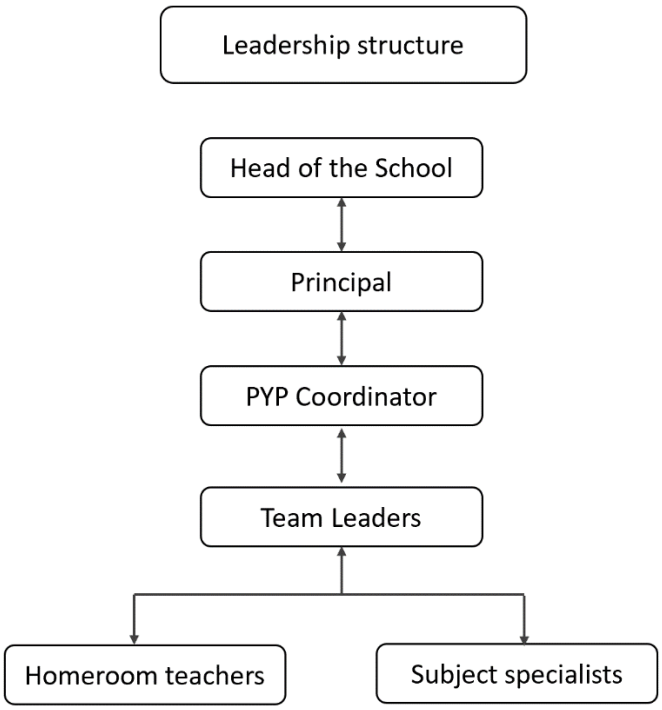
4.3.4.1 Distributed Leadership

Most participants perceived distributed leadership as an effective model to sustain PYP practices in the context of the high attrition rate of teachers and principals. It was gathered from the interviews and observations that distributed leadership was generally understood in terms of the distribution of roles and responsibilities among the stakeholders.

The schools adopted a matrix model for shared leadership with the head of the school and the principal in the primary section and the PYP coordinator and teachers in the secondary section. In general, the pedagogical leadership team consisted of the head, principal, PYP coordinator, team leaders (non-teaching), homeroom teachers, subject specialists, co- teachers. Non-teaching staff were appointed as team leaders and instructional coaches only in one school; the team leaders were also the homeroom teachers (fig 4.13). Principals and PYP coordinators noted that the team leaders and instructional coaches supported teachers in both instructional and managerial areas. Homeroom teachers are the ones who directly implement the PYP curriculum. Subject specialists take up stand-alone inquiries. It was noted by most of the participants that subject specialists play an essential role in the curriculum development process, where they facilitate subject integration and provide the whole team with an in-depth disciplinary perspective. All the schools had appointed co-teachers to support homeroom teachers.

Figure 4.13

Leadership Structure Observed in PYP Schools



The distribution of leadership was evident in the distribution of roles and responsibilities. However, distributed leadership was not without challenges, especially regarding the decision-making powers of the PYP coordinators and teachers. It was found from the responses that most of the decisions on curriculum and pedagogy were taken by the principal and the PYP coordinator; this was reflected in the way teacher leadership was shaped in the schools.

Teacher leadership was commonly perceived in terms of initiatives taken by teachers for the development of teachers and students in the school. Teachers were provided opportunities to mentor new teachers and conduct professional development workshops. Teacher autonomy, an essential element in teacher leadership, had diverse responses from the teachers. While some teachers were noted to have a certain degree of autonomy in curricular and pedagogical decision-making- mainly in planning lessons, other senior teachers shared contrasting experiences where they were mandated to follow a particular lesson plan, activities and assessment schedules as decided by the leadership team. One of the teacher's (19) responses exemplified this aspect, "There are fixes in the timetable, Tuesday, Thursday Friday these homework has to be given, so I have to fit myself and inquiry into it, for me what is important is to see how the concepts, skills are being developed over time…. I have to do the same activities as other sections are doing it… Suppose I do not do it in time. In that case, I need to

play catch up". When the coordinators were asked about the contrasting views on teacher autonomy, they offered a plausible explanation, "many teachers follow what we give them; we do give opportunities to develop their strategies, own plans, how many teachers are willing to do it? How many are courageous and competent?". While indicating the influence of internal factors (teachers' willingness and competency and strict curricular routines/organizational routines) on teacher leadership, these responses exemplified the limitations of distributed leadership practices in the schools.

4.3.4.2 Role of Principal

As the head of the pedagogical leadership team, the principal had several roles and responsibilities to play for the successful implementation of PYP. Participants identified some of the critical roles played by the principal.

Building relations

Almost all participants expressed a positive relationship with the principal. Many teachers expressed that the principal provided personal attention to new teachers and helped them grow in the school. Building care and trust were considered the primary factor that helped teachers perform better in the PYP, as the teacher (18) expressed, "my principal trusts me, I feel free …I know that someone is there to look after me. I know I can take risks, make mistakes and also confess", adding to this teacher (7) added, "when she gave me the position of homeroom teachers, she trusted me, she said –I can do it". Some of the teachers shared that the principal provided professional and personal support that helped them perform well in the school. Teachers perceived that the positive relationship with the principal played a massive role in change management. Participants from one school noted that the principal played a pivotal role in transforming the school from a national board to an IB school. Further, building relations with parents were perceived as one of the most critical roles of principals. It was evident from the interviews that principals made considerable efforts to understand the parental expectation and tried to fulfil them to the best of their ability. Many teachers pointed out the balancing act principals played in fulfilling IB mandates, management demands, and parental expectations.

Fostering collaboration

Collaboration is at the heart of PYP. Principals made sure that collaboration is in each layer of the structure. The first layer of collaboration was seen with the PYP coordinators. The principal had specific time allocated for regular meetings and discussions with the PYP coordinator on various aspects of PYP, both managerial and curricular. In the second layer, collaborations

were seen between PYP coordinators and the teachers. Within this, there were different levels of collaboration. Regularly, the grade level teachers collaborated; once a week, all the grade level teachers had a meeting with their respective instructional coach or team leader; once a week or once in two weeks, different grade level teachers collaborated to understand the learning journey in PYP; once in two weeks, all the teachers had a meeting with the PYP coordinator. It was seen that the PYP coordinator conducted meetings on both managerial and curricular aspects with the team leaders; there were some structured meetings and some informal meetings. Coordinators noted that they collaborated with the senior teachers in MYP during the POI development and the planning for PYP exhibitions. The presence of the principal was evident in the collaboration at the coordinator's level; however, the principal conducted regular discussion sessions with the teacher after every formative assessment in PYP.

Curriculum management

Curriculum management was the primary responsibility of the principals in PYP. Heading the pedagogical leadership team, they steer the curriculum development and implementation in PYP. The responses from the interview revealed that the principal involves in POI development and provides valuable input. As PYP coordinator (1) stated, "Our principal herself is an IB evaluator and has great international exposure; she brings new ideas to our curriculum". Adding to this, PYP coordinator (2) pointed out, "Our principal is very particular about what goes into the POI; she is actively involved in developing the plan every year". The principals played the role of curriculum reviewers, where they tried to position the PYP curriculum that fulfilled the parental expectation, national educational demands, and IB curricular mandates. While discussing the pedagogical inputs from principals, some teachers mentioned that the principal was engaged in classroom teaching to demonstrate new teaching strategies. Some noted that the coordinators primarily conducted classroom observation and demonstrated lessons in the classroom.

Continuing professional development

There was a consensus among the participants that continuing professional development required effective PYP practices. Principals explained the school's commitment to teachers' professional development: "we as a school invest a lot on professional development, we provide good funding for". The schools sponsored their senior teachers and PYP coordinators to attend the IB workshops. Almost all participants interviewed had attended one or more IB workshops. Along with this, the schools conducted a series of in-house workshops on various

aspects of PYP. Principal (1) highlighting the in-house training provided at the school, said, “I conduct two sessions a month for teachers, I would say we are running a teacher training parallel in the school”. Teachers also noted that the workshops included the development of personal skills apart from PYP teaching-learning. Many teachers were allowed to conduct sessions and workshops for teachers to share their skills and knowledge. Many teachers noted that need base workshops were conducted that helped them build confidence in their daily PYP practices. In India, some regional networks of IB schools and other international school networks conduct workshops on various aspects of PYP practices and innovative teaching practices, and many teachers attend these workshops. Both the principals interviewed hosted a PYP meet in their school, where they invited teachers from various IB schools and speakers renowned in the field of education.

Community engagement

Another vital role principals played as pedagogic leaders were their involvement in community development. Principals were actively involved in initiating and implementing activities for the development of the local community. The community development programs conducted by schools ranged from adopting a school, providing professional services to schools in rural areas, and providing financial aid to schools in rural areas. Principal (1) proudly shared, “all these years, we donated one crore to rural school development”. Some participants felt that more involvement with the community would be possible with strategic planning by the management.

4.3.4.3 Role of PYP Coordinator

PYP coordinators have a vital role in the effective implementation of PYP. They are the ones who directly interact with teachers and foster collaboration among the teacher community. Principals perceived that PYP coordinators play a crucial role in developing a community of learners in the school as they are closely connected with teachers and students. PYP coordinators had a minimum of five years of experience in PYP. Data revealed that PYP coordinators mentor and coach the team leaders and teachers. The PYP coordinator played an important role in imparting knowledge on IB to all the teachers in PYP. Coordinators highlighted the importance of each teacher having the depth in understanding the IB philosophy and practices to implement PYP, PYP coordinator (1) effectively thus expressed, “I realized I alone having the depth is not enough; my team leaders also have to be specialized in this as they are the ones who guide the teachers. The support the teacher gets from the head gets diluted if they are not well versed with IB”. It was also seen that the coordinators conducted exclusive

meetings with the team leaders/ instructional coaches to align with the PYP practices. Peer coaching was encouraged by the PYP coordinators to improve teaching practices and set a culture of professional development in PYP. The participants noted that PYP coordinators are actively involved in curriculum management, resolving issues while bridging the gap between principals and teachers.

4.3.5 Students' Perceptions on PYP

Four main themes were identified from the qualitative analysis of the data. First, it was noted that most students described their learning as 'fun' and oriented to their teachers as primary to their learning. They acknowledged teachers' roles and efforts as central to making their experience unique in the school. Second, students used the IB language while describing their learning process and provided multiple examples of how their teachers taught them in PYP. Students also had a positive perspective on IB Learner Profile and expressed that their teachers encouraged them to develop the attributes. Third, the students described various resources as being essential for their overall development, with technology being highlighted by many students. Each of the themes is described in detail in the following section.

4.3.5.1 Teaching – learning in PYP

Across the data, the students who participated in the focus groups described teaching learning as fun and exciting. They highlighted the various aspects of teaching-learning that they liked and felt were meaningful for their lives. Students emphasized individual instruction in the classrooms and pointed out the personal care they get from the teachers. A student shared her experience with teachers providing individualized instruction, "Some students can not understand the concept properly. Our mam will have the patience to listen to us, and she will explain concepts personally." Agreeing with this, another student added, "They (teachers) give extra care for special needs children; they give extra classes if needed". Some of the students pointed out the differential learning and assessment strategies used by teachers; a student shared an example, "my teacher gave me math homework, I could not do it, so she gave me another homework which I could do…" further another student added, "our teachers give different ways to learn, some understand by listening, writing and seeing". From the responses, it is evident that differentiation is one of the critical features in PYP learning.

Another aspect of PYP that was considered fun and exciting was activity-based learning. Most students enjoyed the activities and perceived that they helped them understand the concepts better. A student described learning in PYP as different and fun, "our school has different ways

of learning, most of the others do not get to do it. Our teachers do group activities, they use different strategies and its fun to learn this way". Many students shared the same feeling about activities and had a positive perspective. Many students pointed out that the activities make the learning enjoyable; as one student stated, "learning with activity is not at all boring, we go out of the class, go to labs and do activity…I never have got bored". Additionally, many students shared the benefits of group activities and peer learning. The main benefit noted was in improving one's understanding, "When we learn, we have our understanding, other people will have a different understanding, some people do not understand. So students who do not understand can listen to others' understanding and can get ideas, it helps us improve our understanding also". Agreeing to this, another student added, "when we learn in groups, we know where we have to improve by taking others perspective and coming up with own perspective". This response explicitly describes the benefits of peer learning. Only a few students preferred individual tasks over group activities as they felt they get distracted, like a student said, "Play-based group activities are nice- sometimes in a group task, we start fooling around….I like to do individual work".

In the discussion on activity-based learning, almost all students emphasized the real-life connection with their learning. Many students described how their teachers used real-life examples to explain a concept; a student offered an example, "we were learning fractions, she (teacher) did not just explain the concept and asked us to do the problems, she gave an example of a pizza, and how we can divide among all of us in the classroom, and how the fractions changed ....then it made sense to me". Another student enthusiastically added, "Whatever we learn here our teacher gives its application in real life, she encourages us to use it in real sense…this is so interesting."

Many students described their learning environment and style as being radically different from the other schools, and one student shared, "In my old school, teachers told us what to do; here, they make us understand through pictures, words, meaning. They make us do activities, they make us think and test our understanding". Another student on the same lines added, "I came from a non-IB school, where they used to tell us what to do, they never told about how to do and why we do. The learning engagements are good here".

Some of the student's responses echoed the inquiry teaching-learning in PYP; for instance, a student noted, "They do not tell direct answers, they make us do activities, they ask questions and make us think a lot which helps us in developing skills". Many students associated inquiry

learning with meaningful and interesting learning, as noted by a student, “In grade 4, we had to learn about atoms; I thought it would be boring, but when we learned through inquiry, I got more interested to learn about atoms”. Students generally found inquiry learning interesting and closely connected questions and thinking in the inquiry process.

The students highlighted various steps and aspects of inquiry learning. Many of them noted that teachers were interested in knowing their prior knowledge and built the lesson based on it, as reflected in the student's response, “ They organize teaching as per our knowledge, like we know the first line of inquiry they do not jump into higher things they see what we know and then they teach us”, agreeing to this another student added, “I am new to this school, they tell you what has done before and connect it to the present learning”. Some of the students mentioned prior knowledge assessment as an essential aspect of their learning as they perceived it helped their learning development.

Many students highlighted the importance of being allowed to share ideas. They expressed that they developed confidence and improved their understanding by sharing ideas and listening to other ideas. It was observed that teachers used various learning strategies and multimedia in the classroom; this was reflected in students' responses in the focus group. Many students pointed out learning strategies and multimedia as helpful in their learning as it made learning simpler. For example, a student shared his view, “I usually learn well visually; in Science Bee mam gave words and meaning, and next time, she showed pictures and videos. I was very comfortable learning; another student stressing the usefulness of learning strategies stated, “They (strategies) are the best way; I like it, they make learning very easy”.

Many students emphasized the importance of being given choices in learning and assessment. As many students noted in a focus group, teachers considered their interests, and they heard their ideas. They also noted that they developed their assessments and inquiries, primarily evident in the grade 5 students, who were given more responsibility for developing their own learning as they prepared for PYP exhibitions.

In this way, students implicitly highlighted the IB philosophy of teaching-learning in PYP. The centrality of teachers to the teaching-learning in PYP was apparent across the student data. The role of teachers, as described by the students, is discussed in detail in the following themes.

4.3.5.2 Integration of IB Learner Profile

It was noted from observation and teacher interviews that IB LP was integrated into the everyday practices of the schools and was confirmed by the students. All the students were

well aware of the LP, some even listed all the ten attributes, and others provided examples of how they were introduced in the classrooms. Most commonly, the students perceived LP attributes to the action and behavioural change, " LP are like…ah… how we are supposed to act and behave"; "LP is something we should follow in school, which tells us how we should behave and become better". In the above quotes, the students explicitly link LP and behaviour. Responses from some other students focused on how the teachers introduced LP and reinforced it in the classroom, "Every year, the teacher explains to us the LP and we have to develop these attributes; our teacher observes and corrects us when we are wrong". Another student gave an example of the activity they did in their class, "We have LP bank, our teacher observes all of us and gives us smileys based on our behaviour, at the end of the month, we count how many smileys we have collected". Some of the responses from students highlighted the importance of the use of IB language in imbibing LP. For instance, students new to IB school noted, "I did not understand LP when I came to the school, many of my friends kept saying why are you not helping, why are you not inquiring and all, I did not understand why they were saying like that when I understood the LP I got to know that these are important and I should follow. Many students felt that teacher's encouragement helped them develop LP. Additionally, students noted to use of LP as a reflection and assessment tool in the PYP, "After the academic year, we get LP books, we should reflect and self-assess. It helps us to know our progress and how we have improved on LP"; "At the end of the year it is like progress card for us to improve upon. It is also about self-reflecting on the ten attributes- have I been polite, have I hit anybody, have I helped my friends". These reflect how LP is integrated into the PYP. In totality, the responses reflected how LP was integrated into PYP.

4.3.5.3 Role of Teachers in Teaching-Learning

It was found that students considered their teachers the primary reason behind their positive schooling experience, describing their teachers as caring, encouraging and understanding. A student described how her teacher made her comfortable in the school, "I was new to the school, and everything was different, my teacher sat with me daily after the class and personally taught me the things I did not understand; she made me feel very comfortable." Agreeing with this, another student added, "They care for each child, not just one". A student explained the commitment of her teachers and how it encouraged her in learning, "My teacher was very sick and she came to school and taught us.... after I saw her, I was very active". Many students provided examples of how their teachers clarify, "if I do not understand, I can ask my teacher, she never scolds me, she understands me well"; "they understand our learning, why we are not

answering, they do not beat and shout at us". A student also highlighted that the encouragement from their teachers helped them perform better in PYP; for instance, a student shared, "Teachers encourage us to improve in areas which we lack; they help us overcome fear. Like, I had fear in maths, my teacher encouraged me, she gave me many opportunities to do maths, she never blamed me for mistakes…she had patience and helped me with my problems".

Students generally had a positive relationship with teachers and highlighted their role in their success in PYP. The responses show that teachers' attributes like caring, trusting and encouraging were seminal for students' positive learning experiences.

4.3.5.4 School Resources

Across the student focus groups, the students mentioned various resources in the school as central to their overall development. This aspect was captured well in the student's response, " In my school, we have many sports like swimming, skating, tennis and cultural activities; our teachers focus on all-round development". Most students emphasized technology as an essential resource for learning; as a student noted, "I like the ICT, iPad, computer lab. With these gadgets, we can research anytime we want, it is convenient, and also you can save information". Many others described the use of technology in the learning process; for instance, students shared examples of integrating technology into their learning. One student described making digital posters for a sports match in the school, and the other described making a short video using an iPad. Overall, students found the technology integration exciting and valuable in their learning.

Most of the students pointed out sports as essential resources in the schools; this reflects students' interest in sports and games and the importance given by the school to physical development. Apart from this, some other students pointed out libraries and science laboratories as essential resources for learning. It was evident from the responses that students acknowledged the importance of having access to resources in the school regardless of the types of resources, with some students noting that they had more resources compared to other schools they had attended.

4.3.6 Conclusion

The themes that emerged from qualitative analysis highlighted several perceptions, practices, processes, and conditions involved in curriculum development, implementation, evaluation, and pedagogical leadership. This analysis further allowed the researcher to identify interconnected elements within each component of curriculum management. The findings from different data sources like teachers, coordinators, principals, and students helped the researcher

to validate the themes. Overall, the qualitative analysis facilitated the researcher to expand the findings of quantitative analysis and provided a greater depth to understanding curriculum management in PYP.

4.4 DATA INTEGRATION

Curriculum management is a complex process that encompasses- curriculum development, implementation, evaluation, and pedagogical leadership. It is an important enterprise for the schools to manage the curriculum for the success of PYP effectively. This mixed-method research focused on teachers' and students' understanding and approximation of curricular, pedagogical, and leadership practices in PYP through these research questions: What are the processes and conditions involved in implementing the PYP program? How have the schools adopted the PYP curriculum in the Indian context? What are the challenges faced by the PYP teachers in implementing PYP? Quantitative and qualitative data were collected and analyzed to answer these research questions and were presented in the previous sections. This section aims to compare, blend, contrast and triangulate the data to discern, elucidate and comprehend the conceptions revealed through combining the data. A concurrent triangulation design (Creswell & Plano Clark, 2007) was used to determine the extent to which the quantitative and qualitative results converge and how qualitative results expand the understanding of the concepts under the study. The data triangulation helped determine what inferences can be drawn to add to the body of knowledge about PYP implementation in India from this study. Triangulation is a beneficial practice in mixed-method research, which in this case, helped to focus on curriculum management in the schools implementing PYP. The quantitative and qualitative data revealed significant aspects of curriculum development, implementation, evaluation, pedagogical leadership, student perspectives on PYP, and challenges teachers face in implementing PYP. In this section, these aspects are revisited by combining the data to gain a focused understanding of curriculum development, implementation, evaluation and pedagogical leadership within the umbrella of curriculum management in PYP schools. Further, models for curriculum development, implementation, evaluation and pedagogical leadership are developed based on the combined data.

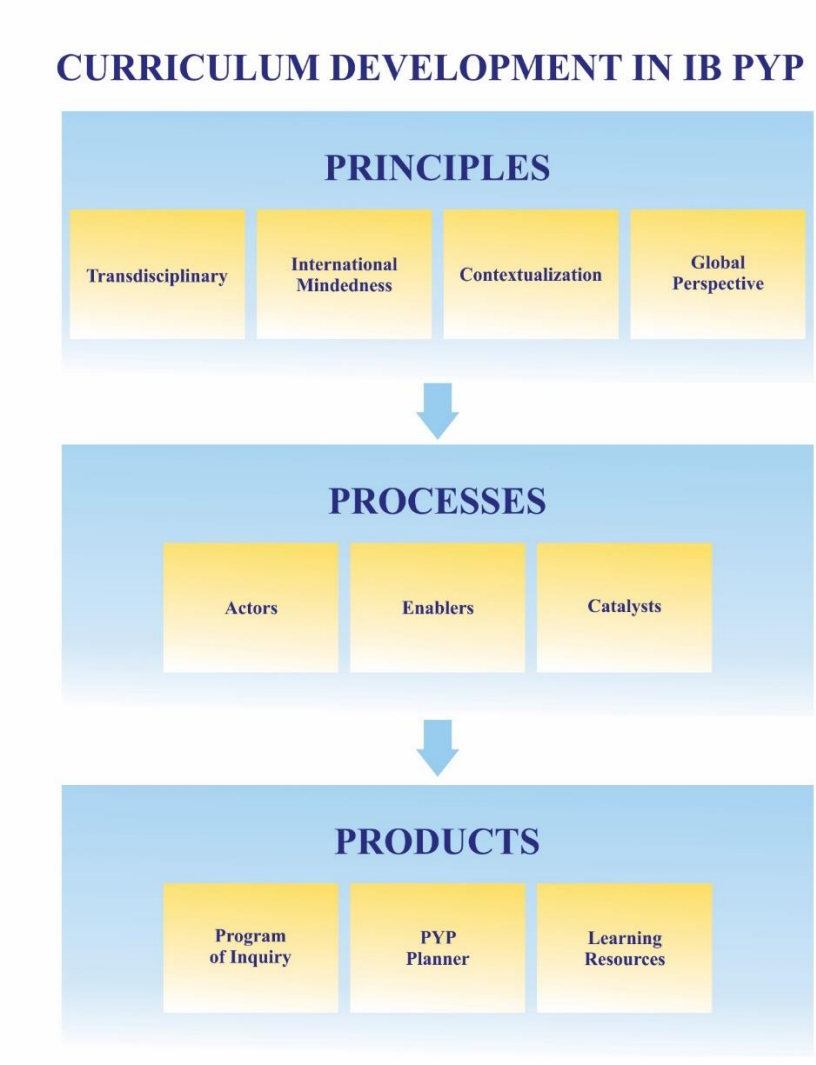
4.4.1 Curriculum Development in IB PYP

The school curriculum under study is the International Baccalaureate Primary Years Program curriculum- designed to create inquiring, knowledgeable, and caring people who can create a better world through intercultural understanding. This is an international curriculum that is adopted across the world for primary education. Each school needs to develop their curriculum;

thus, curriculum development plays a crucial role in making the curriculum relevant to the students and community. This study illuminated how schools develop PYP curricula by contextualizing the socio-cultural and educational landscape of the school's context with the PYP curricular mandates. A curriculum development model specific to IB PYP is developed using the combined quantitative and qualitative data that clearly shows the principles, process, products, problems and prospects of developing the IB PYP curriculum. Figure 4.14 represents the curriculum development model for IB PYP

Figure 4.14

Curriculum Development in IB PYP



4.4.1.1 Principles of Curriculum Development

In developing a school-specific curriculum, educational principles are followed; in the case of IB PYP, specific principles were identified as vital apart from the general principles. The principles identified are the Transdisciplinary curriculum, International mindedness- Learner

profile integration, contextualization, and global perspective. The researcher investigated how these principles are interpreted and integrated into developing the PYP curriculum.

Transdisciplinary Curriculum

PYP curriculum is based on a transdisciplinary framework where teaching and learning transcend beyond traditional disciplinary boundaries. Many teachers expressed that the PYP framework helped them and the school make curriculum development decisions. Many teachers appreciated the flexibility of the PYP framework, where teachers can choose content under the transdisciplinary framework. Almost all teachers' understanding of transdisciplinarity was rooted in the transdisciplinary themes provided by the IB PYP. In general, there was a consensus on the perception of the transdisciplinary curriculum; however, with some variations. Almost all respondents articulated their understanding of transdisciplinarity at the curriculum development stage as integrating subjects under the PYP transdisciplinary themes. The team decided on how the subjects are integrated and the degree of integration during the curriculum development process.

International Mindedness- Learner Profile Integration

The IB has conceptualized international-mindedness as a set of ten attributes that are encapsulated in the Learner Profile. The aim of all IB programs is towards the development of these learner profile attributes in the community of learners. Most teachers (95%) perceived that integration of the Learner Profile is vital in developing the written curriculum. It was noted that LP provided clear guidelines for teachers to focus on developing each LP attribute among children. It was found that teachers integrated the most relevant LP attribute in each unit in the written curriculum; however, teachers expressed that other LP attributes come into play during the teaching-learning process.

Contextualization of Curriculum

IB provides a curriculum framework within which the individual schools need to develop their curriculum that caters to the needs of the nation, community, and students. Thus contextualization emerged as one of the important principles for curriculum development in IB PYP. It was found that the principals, coordinators, and teachers were cognizant of the macro forces like the national education system and parental expectations influencing the school's curriculum. Around 85% of the teachers reported that the PYP curriculum is aligned with the national curriculum for the smooth transition from IB to any other national school board. Most teachers opined that IB education is still growing in India, and thus, most parents opt to

continue middle and secondary school on national boards. This is another reason the schools should press on contextualizing curriculum to the national curriculum to cater to the high parental expectations. The qualitative investigation corroborated with the quantitative data, where teachers provided substantial data on how they aligned the PYP curriculum with the national curriculum. For instance, it was found that the majority of the content in the PYP written curriculum was drawn from the subject-based national syllabus and mapped under the six transdisciplinary themes.

Global Perspective

IB emphasizes developing knowledge and skills that help students understand global developments and challenges in order for them to take action at local, national and global levels. The school needs to ensure that the global perspective is integrated into the PYP curriculum. The quantitative data revealed that around 90 % of the teachers perceived that the topics in POI are of global significance; however, this did not emerge in the interviews. Only a few teachers provided supporting examples of how they included content on global developments and challenges, primarily related to climate change and globalization, in grades 4 and 5.

4.4.1.2 Processes in Curriculum Development

Curriculum development is a dynamic process where several actors and factors influence the process. In the present study, the researcher has identified the common processes involved in developing a written curriculum in PYP. The processes discussed are related to the development of the Program of Inquiry (POI) which is a written curriculum and is the guiding document for teachers to plan their teaching-learning for the entire academic year. The programme of inquiry is a matrix made up of the six transdisciplinary themes running vertically and the age groups running horizontally. In each cell of the matrix, a unit of inquiry (UOI) is documented that is age appropriate. Each UOI consists of a central idea (CI), a line of inquiry, and critical concepts. Following are the specific steps identified for the development of POI.

Steps for POI development

- Step 1: Discus and clarify the descriptors of each transdisciplinary theme
- Step 2: Choose topics/ concepts under each TDT and formulate Central Idea
- Step 3: Integration of subjects
- Step 4: Unpacking the central idea- line of inquiry
- Step 5: Integrating PYP elements (concepts, Learner profile attributes, and skills)

- Step 6: Horizontal and vertical alignment

Once the POI is developed, it is reviewed by the team and distributed among grade-level teachers to develop PYP planners based on the POI.

In order to carry out the curriculum development process effectively and efficiently, a conducive environment is highly important. The study identified the explicit factors that enabled the development of the PYP curriculum.

Actors Involved in Curriculum Development

It was found that various actors at different levels were involved in the curriculum development process. The significant actors involved during the curriculum development phase were principals, PYP coordinators and teachers. Almost all teachers reported that principals were involved in curriculum development and supported teachers for active participation. It was found that principals' perspectives and strategies influenced the PYP curriculum regarding content selection. Teachers in one school noted that the principal was more involved in the curriculum's monitoring and review process than Poi's development. Overall, it was found that principals steer the curriculum development in the PYP and support teacher participation.

PYP coordinators are considered crucial actors in the development of the curriculum. They are viewed as leaders and coaches with in-depth knowledge of the PYP curriculum. The role of PYP coordinators was to bridge the teachers and the principals. In general, the PYP coordinators played the role of a coach in training and guiding teachers. It was observed that coordinators had more autonomy in making decisions during the curriculum development phase. As many teachers expressed in the interview, by balancing the expectations from the higher leadership team and teachers, the coordinator ensures the POI is developed in time and is relevant to the school community.

Teachers were seen highly involved in the curriculum development process. It was observed that senior teachers from all grades and subject specialists were part of curriculum development. Teachers perceived that their teaching experience, understanding of PYP and competencies influenced the quality of POI. Most of the teachers opined that the involvement of teachers in the curriculum development phase is crucial as they are the ones who understand the practical challenges and opportunities that exist in the teaching-learning process. Further, some teachers expressed the negative influences of teachers on curriculum development due to a lack of scholarship and competency in developing an integrated curriculum like the PYP.

Overall, teachers played an important role in curriculum development and helped bring practical experience and knowledge to make the POI relevant for students.

Students of grades 4 and 5 were engaged in developing their own unit of inquiries and assessments. Many teachers provided opportunities for student-led inquiries where the students explore concepts of their interest along with the structured inquiries planned by them.

Enablers in Curriculum Development

In the study, two enabling factors were identified that facilitated the effective development of the PYP curriculum. IB as an organization enabled the schools to develop relevant and effective curriculum. It was found that IB, through its strict curricular mandates, holds a substantial regulatory influence on school curriculum development. The teachers, coordinators and principals asserted that the PYP curriculum framework helped the school strategically plan the content and teaching practices. It was found that the perception of an integrated curriculum, specifically a transdisciplinary curriculum, was highly influenced by the IB's conceptualization of transdisciplinarity; this was reflected in teachers' interpretation of the PYP curriculum. Furthermore, teachers noted that IB's professional development programs enabled them to develop and implement PYP.

Stakeholders, including parents and students, were identified as enablers in curriculum development. It was found that parents were involved in the development process to understand their expectations from the curriculum. As principals noted, parents who align with the philosophy of IB education positively impact students learning. Thus, the schools oriented the parents before every academic year on the process of IB PYP education; however, some teachers expressed that a better orientation for parents should be given as they can enable effective learning of the students. With regard to students, it was found that students from grades 4 and 5 were involved in curriculum development, where they planned the entire units based on the POI given by the teachers. Teachers asserted that students' autonomy and pro-activeness are essential in getting the best of the PYP curriculum.

Catalysts for Curriculum Development

PYP is a rigorous and challenging program for both the implementers and the students. The program demands that the school has a suitable academic culture that supports robust curriculum development and implementation. The study identified academic culture and pedagogical leadership as the major catalysts for curriculum development in PYP. Collaborative and democratic cultures emerged prominently from both quantitative and

qualitative data. All teachers attributed the effectiveness of curriculum development to the collaborative process and perceived that collaboration among teachers helped the team to come to a common understanding of various elements in the complex transdisciplinary curriculum. Discussions, negotiations, and collective consensus were important elements of collaborative practice. The academic culture in PYP was fostered by sound pedagogical leadership of the principal, PYP coordinator and teacher leaders. Pedagogical leadership in PYP adopted distributed leadership, where each team member took ownership of their roles and duties. The study illuminated various layers of distribution of leadership within the team that acted as catalysts in developing a robust PYP curriculum at the school level.

4.4.1.3 Products of Curriculum Development

The school develops several products involving the actors, and the enablers and catalysts facilitate the process.

Program of Inquiry

The main product is the Programme of Inquiry (POI), the written curriculum. Other teachings and learning products are developed based on the POI. The programme of inquiry is a matrix made up of the six transdisciplinary themes running vertically and the age groups running horizontally. In each cell of the matrix, a unit of inquiry (UOI) is documented that is age appropriate. Each UOI consists of a central idea (CI), a line of inquiry, and critical concepts. It was observed that the pedagogical leadership team develops the POI and distributes it to the teachers at different grade levels to develop Units of Inquiry.

PYP Planner

Teachers develop PYP Planners to guide the implementation of POI. PYP planner is a nine-stage planner with questions that guide the teachers to plan and organize teaching-learning embedded in an inquiry-based approach. All the teachers perceived PYP planners as valuable documents for planning specific teaching-learning for each unit of inquiry. Further, they asserted that the planner helped them to reflect and improve their performance, as the teacher (7) noted, “PYP planners are most important for teachers; this is where we plan every learning engagement, activities for each unit”. The actors involved in the PYP planner developed varied in the schools.

Learning Resources

The school produced several learning and assessment materials to support transdisciplinary teaching-learning. It was seen that the IB schools had a range of resource books that were utilized in the inquiries. Many participants reported that they developed their learning materials

in line with the unit of inquiries. The learning resources developed included resource books, graphic organizers, assessment worksheets, reading material extracted from books/the internet, and books from the library.

4.4.1.4 Problems/ Challenges in Curriculum Development

The study highlighted several problems and challenges in developing the PYP curriculum. One of the significant challenges identified was related to teacher competency. Most teachers opined that teachers in India are not trained for curriculum development, especially an integrated curriculum like PYP. Moreover, a transdisciplinary curriculum is a new approach in India and teachers are not aware of the breadth and depth of transdisciplinarity learning to narrow interpretation of the concept. Most senior teachers pointed out the schools' limitations in interpreting transdisciplinary curricula in the Indian context and its implications on curriculum development.

Parents play a significant role in the success of PYP as they significantly influence students learning. Lack of awareness of the PYP way of teaching-learning among parents was a major challenge for curriculum development. Teachers shared that most parents have high expectations from the schools, and their expectations are rooted in traditional education focusing on high stake testing and scoring marks in examinations. Since IB schools in India are private enterprises, they are bound to fulfil the parents' expectations; thus, it is challenging for schools to balance between PYP mandates and parental expectations.

Apart from parental expectations, it was identified that the prevailing national education system also poses challenges in PYP curriculum development. Most of the teachers perceived that the existing exam-oriented education system at the national level functioned as a critical external constraint for shaping the transdisciplinary curriculum in PYP. Teachers and principals noted that many local parents' educational aspirations for their wards are influenced by the existing national educational landscape, where they expect their children to excel in national-level examinations with extensive international exposure. Thus, the PYP schools, to provide a smooth transition from PYP to the national board, have incorporated most of the syllabus into the PYP curriculum. The extensive incorporation of a disciplinary-driven national syllabus was perceived as a constraint in developing and implementing a transdisciplinary curriculum as envisaged by IB PYP. This was exemplified in the comment by the teacher (16), "I feel the broader idea of IB in introducing the transdisciplinary themes was to guide the inquiry of real-life bigger problems or issues where students can take actions. This demands a choice of

topics/concepts with a broader scope for the free flow of subjects into it; in most of the PYP schools, they stick to the national syllabus, which is technically disciplinary".

Although transdisciplinarity is achieved by integrating subjects within the transdisciplinary framework, teachers pointed out that the interpretation of transdisciplinary curriculum and learning is limited and influenced by the national education system. All these suggest the challenges the national education system poses in expanding PYP. Nonetheless, with the current PYP schools' growth in India, the magnitude of this challenge is distinctive of the school's philosophy and the socio-cultural background of the parents.

4.4.1.5 Prospects

The combined findings from quantitative and qualitative strands provided an in-depth understanding of the curriculum development process in PYP schools. Based on the findings, the researcher identified pertinent prospects that could enhance the curricular processes in PYP. PYP proposes a whole school approach in order to impact the learning community. Since a transdisciplinary inquiry-based curriculum is a new approach to primary education in India, the schools need to focus on institutional building programs to increase the scholarship and competency of every stakeholder to support various curricular activities. Professional development programs are an ongoing activity in PYP schools; however, some senior teachers expressed that need-based and more specific professional development programs are required to impact teaching-learning immediately. In this regard, the leadership team needs to organize professional development programs on a wide range of concepts related to PYP apart from the professional development programs conducted by IB.

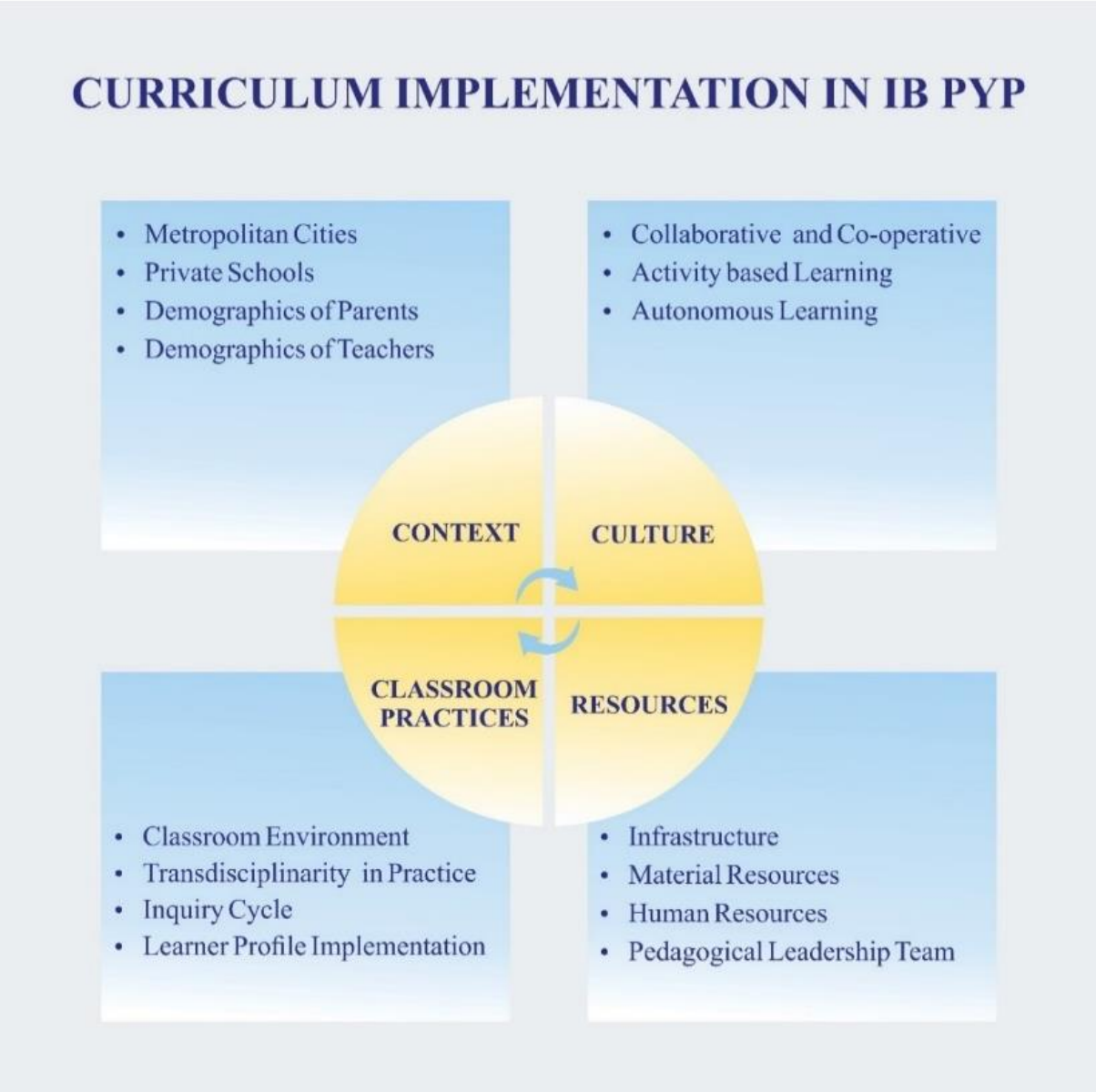
In India, IB PYP schools are a recent phenomenon; for any school to impact the students' lives and society, they require the support and engagement of the community. The PYP schools need to tap into the potential of the local and regional community through innovative school-community partnership programs. Since IB strongly promotes international-mindedness, schools must regularly provide international exposure to their learning community. The schools under the study had less international diversity within the campus that can provide authentic international exposure. With technological advancement and the global mobilization of people across countries, schools need to establish international partnerships to foster international-mindedness among teachers and students.

4.4.2 Curriculum Implementation in IB PYP

IB PYP adopts inquiry-based teaching-learning within the transdisciplinary framework to create young people who are inquirers, knowledgeable, and can create a better world. Curriculum implementation is a major process that directly impacts students learning. Various data curriculum implementation was collected and analysed through quantitative and qualitative approaches. The combined data is presented in the following section to describe curriculum implementation in PYP schools. Figure 4.15 represents the curriculum implementation model for IB PYP.

Figure 4.15

Curriculum Implementation in IB PYP



4.4.2.1 Context

The study illuminates the context in which the IB PYP curriculum was implemented. The school's macro, meso, and micro contexts impact curriculum implementation and, thus, student learning at the individual level. The data on macro context revealed that all the schools under the study were run by private organizations located in metropolitan cities of India. The parents, who are the major stakeholders, represented high socio-economic groups. These schools with international school status were not regulated by any state or national body and were regulated by IB for quality compliance. Overall, in the macro context, the IB schools in India have their niche and developed and implemented curricula based on the guidelines provided by IB. In the meso context, the philosophies of two schools out of three schools on international education were explicit in the vision and mission statements. One principal explicitly mentioned that their school was a national school that adopted PYP primarily for pedagogic approaches.

All the schools had large campuses with well-equipped labs, libraries, open fields, and a wide range of amenities. The data on the demographics of teachers and students provide an understanding of the micro context. Most of the teachers were female Indian nationals with graduation in different disciplines; 64% had professional degrees like B.Ed and B.El.Ed. Only 24 % of the teachers reported having IB certification, and 40% had international academic exposure. Most of the students were Indian nationals from the same region (state) with very few international students. The schools had a small percentage of children with special needs. These data on macro, meso, and micro contexts facilitate the in-depth understanding of curriculum implementation in PYP.

4.4.2.2 Culture

The culture the schools set in is vital to impact students' learning positively. The study highlighted specific learning cultures created by the teachers and school leaders within the classroom and school community for successfully implementing the PYP curriculum.

Collaborative and cooperative learning emerged prominently in both quantitative and qualitative data. The data from the student survey indicated that collaborative learning was prominent in the classrooms; the data from the observation schedule showed a mid-high level of collaboration between students in the classroom. The interview and observations provided substantial evidence of collaborative and cooperative learning. Across all the classrooms, group activities were used as a major strategy to foster collaborative learning among students. It was found that teachers played a key role in creating a safe and supportive environment for

collaborations within and outside classrooms. In addition to teachers' efforts, the classroom infrastructure also facilitated collaborative learning.

Activity-based learning was embedded in the school's learning culture regardless of the grade level. Both teachers and students asserted that activity-based learning helped them understand the concept with a straightforward approach. This learning culture was fostered through individual and group activities in different phases of the learning journey. Teachers devised innovative, practical, and challenging activities to engage students meaningfully throughout their learning journey. Teachers used activities for different purposes and in different phases of learning. For instance, many teachers reported using activities to tune in to a particular inquiry to make students interested in the learning topic; some used them while developing students' understanding of the topic, and others reported using activities for assessments.

PYP highly promotes autonomous learning among students. In this context, autonomous learning is seen as both process and an outcome of the curriculum. Most teachers believe that children are curious by nature and can learn. Teachers perceived autonomous learning as a lifelong process for which both schools and parents should create an environment where children can learn. It was evident from interviews and observations that teachers consistently provided greater student agency and ownership using various strategies. Autonomous learning was still emerging in the schools under study, and teachers knew the purposes and strategies to develop an autonomous learning culture.

Overall, it was found that principals, teachers, and PYP coordinators adopted regular routines and consistent strategies to create a robust learning culture to make the PYP way of teaching-learning impactful.

4.4.2.3 Resources

A wide range of resources is required to implement the curriculum effectively. The researcher investigated different resources that are available, accessible and utilized in PYP. In the present study, two kinds of resources are studied – human and material resources. Data from teachers and students in both quantitative and qualitative strands indicated the availability and accessibility of a wide range of material resources at school and within the classroom. Most students reported that the school provided good technological resources and resources for co-curricular activities. It was observed that most classrooms were equipped with an in-house library, and students read books in their leisure time. Many teachers appreciated the rich resources available to aid students learning and expressed that quality resources are essential

for the successful implementation of PYP. Some senior teachers noted that technology needs to be embedded within each classroom and made hassle-free for students and teachers.

Human resources are a vital part of curriculum implementation. Teachers are at the centre of human resources in curriculum implementation. The study illuminates the role of teachers in curriculum implementation from both teachers' and students' perspectives. The teacher's role is discussed in two sections, one is related to attitudes and attributes, and the other is about the teacher as a facilitator. The quantitative and qualitative data are combined to describe teachers' roles.

Most teachers asserted a positive attitude towards the PYP curriculum as the first step towards effective curriculum implementation. Many teachers expressed that teaching in PYP requires them to shift their attitude from traditional approaches of teaching and controlling children to guiding and facilitating children for learning. This was reflected in student focus groups where many students expressed that their teachers guide them for learning over imposing during teaching-learning in the classroom. In addition, teachers asserted that they need to be lifelong learners and adapt to new approaches to make teaching-learning relevant for students.

Most teachers noted that LP attributes are to be modelled by teachers as it impacts students significantly. Many teachers stressed caring and building trust with students to succeed in inquiry-based learning. Students' responses aligned with this, expressing that their teachers are kind, caring, and trustworthy. In addition, Participants emphasized positive student-teacher relationships for successful inquiries in PYP. They asserted that PYP teachers need to provide a safe and secure environment where students feel valued and respected. Since inquiry stresses student initiation and autonomy in learning, teachers felt that the students need to trust their teacher to share their opinions and perspectives in the class openly. Overall, all teachers appeared to have a positive relationship with students and made efforts to build trust with and among students. Apart from these attributes, flexibility, resourcefulness and preparedness were highlighted by teachers as essential attributes teachers should hold to make an impact in PYP curriculum implementation.

The role of teachers in PYP is to facilitate students in connecting their prior knowledge to new knowledge through meaningful experiences. In PYP classrooms, teachers actively assume the role of a facilitator to promote autonomous learning among students. Almost all teachers strongly felt they played the role of a facilitator and a reflective practitioner in PYP. It was found that teachers used facilitation based on the needs of the students and phases of the

learning journey. Overall, in most classes, teachers guided the students, bridging the learning gap, clarifying misconceptions, and scaffolding them in their learning. As facilitators, teachers were observed using various reinforcements to encourage students to engage in the inquiry.

Many teachers expressed that an additional teacher in the classroom supported them in facilitating all students in inquiry. In some classrooms, an extra teacher engaged a group of students/ individual students to support them with learning. In general, all participants valued the inquiry model for learning and played the role of a facilitator by creating opportunities to support student inquiries.

The pedagogical leadership team managed, monitored, and empowered the human resources in the school. The principals, as pedagogic leaders, facilitated collaborations across human resources by building strong relations with all the stakeholders. Continuing professional development for teachers was prominent in PYP, where PYP coordinators actively coached teachers in PYP approaches for teaching learning.

4.4.2.4 Classroom Practices

In the present study, teaching-learning in PYP is studied concerning classroom practices. This section describes PYP-specific approaches like transdisciplinary teaching-learning, inquiry cycles, Learner Profile implementation and assessment practices in detail. Data from teachers and students and quantitative and qualitative data are combined to provide a meaningful understanding of classroom practices in the context of PYP.

Classroom environment: The classroom environment in PYP is comprised of both physical and psychological environments. Teachers were viewed as key contributors in building a conducive environment in the classrooms. Teachers believed that their attitude toward students, convictions on IB philosophy, and competencies shape and influence the classroom environment. Many teachers shared that they followed a routine and planned strategies to build a culture of inquiry and collaboration. Teachers recognized that substantial time was required to build a good classroom environment that fostered inquiry.

The physical environment of the classrooms was spacious and had flexible seating arrangements. Most of the classes had seating arrangements conducive to group activities. The seating was arranged so teachers could move all around the classroom giving access to every student group. All the classrooms were full of visuals of posters of IB essential elements- key concepts, transdisciplinary themes, IB Learner Profile, school's mission and vision statement, basic etiquette, and classroom management rules. Each class had a space to display students'

work, and some of the classrooms had a space called ‘Wonder Wall’ where students posted curious questions and thoughts. Another critical aspect of the classroom setting in PYP was the different resources available within the classroom. Most classrooms had an in-house library, and students were seen reading books in their leisure time. Early years classrooms were equipped with manipulatives and toys in the corners of the classroom.

Transdisciplinary curriculum in practice

The most common approach to transdisciplinary teaching was the integration of two or more subjects to explore each transdisciplinary theme. Several teachers provided examples of this approach. Most teachers exemplified ‘making connections’ as a key to transdisciplinary teaching and learning. The qualitative data found that teachers interpreted ‘making connections’ in various ways; for instance, most teachers perceived transdisciplinarity as making connections to real life. Another common interpretation is related to applying knowledge and skills to other disciplines. It is important to note that about 90% of participants addressed human commonality and diversity through transdisciplinary themes (from quantitative analysis); however, this was not reflected in the interviews, and only two teachers mentioned making connections to bring out human commonality. This shows the gap in perception and practice.

Participants affirmed the role of teachers in transdisciplinary teaching, “ (….) we should know from the roots how the topics and concepts are connected, and it is a teacher’s role to keep connecting the learning to the central idea, different things in different disciplines…they (teachers) should not leave them (students) to themselves thinking they will automatically connect the dots… we need to make connections”- Teacher (28).

From the comparison of two data sets on transdisciplinary teaching, three things can be implied, 1) transdisciplinary teaching-learning is happening in a variety of ways and is highly shaped by the interpretations and competency of teachers, 2) Transdisciplinarity in teaching-learning in terms of making connections across and beyond subject boundaries to bring out the human commonality is limited by teachers’ perception and approach that is highly relied on subject integration rooted in the disciplinary driven national syllabus. 3) There is a complexity in finding the evidence of transdisciplinary practices- in terms of teachers and students making connections across and beyond subjects, making connections to real life, and between and across inquiries. The combined data indicated that transdisciplinary curricular practices are still emerging and have greater scope for broadening school interpretations and practices.

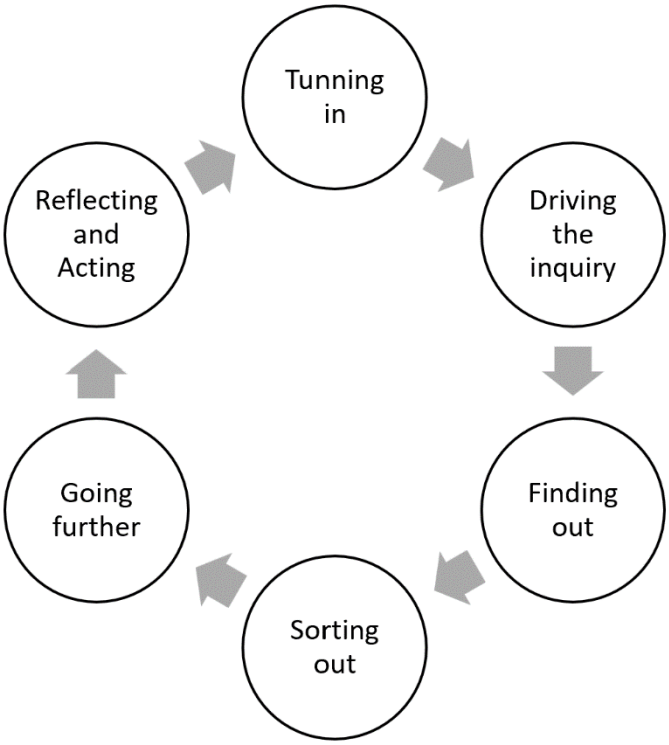
Inquiry Cycle

PYP curriculum explores the six transdisciplinary themes through specific and structured inquiries at each grade level to develop intercultural understanding and international mindedness among the learners. The study illuminates the critical characteristics of inquiry-based teaching learning and the teachers' general inquiry cycles by providing relevant evidence for these practices (refer to qualitative analysis 4.3.2.2). The critical characteristics of inquiry-based teaching-learning are- 1) Age appropriateness, 2) Building on students' prior knowledge, 3) Real life connection, 4) Concept-based learning, 5) Activity-based learning, 6) Differentiated learning, 7) Autonomous learning, and 8) Collaborative learning.

Quantitative and qualitative data from teachers and student sources were combined to describe the inquiry cycle in PYP (Fig 4.16). The collective sequence of the inquiry cycle described by the participants is presented (refer to qualitative analysis for detailed description 4.3.2.2).

Figure 4.16

Inquiry Cycle in PYP



Learner Profile Implementation

IB Learner Profile was the focus of curriculum implementation. Quantitative data showed that almost all teachers (95%) perceived that the Learner profile holds a central position in PYP; in support of this, the data from the classroom observation schedule revealed a high rating on –

providing opportunities to develop LP (refer to table 4.15). Data from teacher interviews, classroom observation, and student focus group discussions were combined to identify the common approaches and steps adopted by teachers to implement the Learner Profile within the classroom. Almost all teachers reported discussing the attributes regularly in the school to familiarize students with the LP; this was the first step for developing the LP attributes among the students. The observation was used as a tool for the development and assessment of LP. Along with observation, teachers reported using reinforcement to encourage positive behaviour among students. Teachers used activities like LP bank to encourage students to demonstrate LP attributes. Reporting the development of LP is one of the significant aspects of student assessment in PYP. Teachers, students and parents did reporting. Teachers maintained anecdotes and observations to report on each student's development of LP.

Some of the experienced teachers expressed that their understanding of learner profiles was limited among the teachers. This was mirrored in the quantitative data from the student survey. In contrast, most students identified themselves with the attributes inquirers and knowledgeable, risk-taking, caring, and open-minded were rated mid-level. The least associated attribute was reflective and balanced. Teachers during the interview expressed their concern on the sustenance of LP attributes throughout the schooling; this is reflected in the diverse response on sustaining learner profile attributes after PYP; 30% of teachers felt it is not sustained, 45% felt it is sustained, and the 16% were equivocal.

Overall all the participants perceived that the development of LP attributes is a lifelong process and can be developed through an iterative process involving discussion, demonstration, observation, and reflection.

4.4.2.5 Challenges in curriculum implementation in IB PYP

The study delineated several challenges teachers and school leaders faced in implementing the PYP curriculum. This section discusses challenges under two categories, one related to challenges from external factors and another related to challenges from internal factors.

Parental expectation

Parental expectations are rooted in educational philosophies and the social norms of Indian societies. They focus more on exam results, learning subject content and teacher-directed instruction. This often conflicts with the process-oriented, transdisciplinary, student-centric approach to education as envisaged by IB PYP. Most of the participants highlighted the conflict in the educational ideologies of parents, and that IB posed a considerable challenge in

effectively implementing the PYP, this was reflected in the principal's (3) comment, "For most of the Indian parents, high marks on exams are important, their focus is only on academic rigour…even now for many(parents) the inquiry approach and activity-based learning are unsettling, they think the kids are not learning if there are no exams".

Another challenge pointed out by most of the teachers was related to the parental support required in PYP. Parental support is crucial, especially in PYP; as a teacher (19) commented, "Parents want the school to do everything, Parents in CBSE feel very comfortable- mera baccha karlega, school karadegi portions. In PYP, parents need to be proactive. Here, parents are not trained and oriented rigorously on what kind of support is expected of them" in the same lines, the teacher (16) added, "Parents want the kids to be the best in everything; they want to see the progress soon, they are not ready to observe the child's development throughout the year, we can observe in the school, but the parents have to observe and monitor outside the school". It is clear from the comments that the traditional attitude of parents towards schooling and their lack of awareness of IB programmes posed a more significant challenge in the implementation of PYP. Both principals and PYP coordinators noted that privately-funded schools are required to resolve this tension to fulfil the parental expectations from the school. They also noted that considerable efforts are taken towards educating parents about the rationale and process of PYP and its role in students' learning.

PYP curriculum model

Most teachers found the PYP curriculum challenging due to its complex transdisciplinary model with various interconnected and interdependent elements. The teachers saw the analysis of each element and understanding the breadth of each component as overwhelming. Many teachers expressed to have gained a grip on PYP with experience. It was evident that teachers required time and experience to internalize IB philosophy and the PYP model for primary education. The interview exemplified this: "It is not a challenge anymore, I feel. As a newcomer, it was in greek and Latin and trying to understand the philosophy was a task. Initially, we had to work hard to understand that PYP……Making a planner was the biggest challenge. As time went on and experience added, it is easy now".

Teachers highlighted various challenges related to curriculum and practical implementation of the curriculum in classrooms. The most common challenge noted was providing differentiated learning engagements. Most of the teachers were aligned to differential instruction; however, they found it challenging to implement in totality; as the teacher (28) shared her experience, "It (differentiation) bugged me for a long time, I was not seeing the way I expected it to be,

then I did self-study, I understood differentiation in content, process and product. I had SA-booklet, oral, even content differentiation I could see- video, chart, oral, hand on… in differentiation, all these different learning engagements should be happening simultaneously, like- few kids are watching a video, doing hands-on, reading books. However, in our classrooms, we give everything to everyone, and the time is consumed… I agree it is reinforcing but time-consuming". Some teachers expressed that they required more guidelines on practical classroom differentiation approaches.

Another challenge was about making learning visible, specifically the learning process. Many teachers expressed difficulty in this area as they did not have experience and practical ways to make learning visible and use that information in their practices. Some others felt the challenge in planning inquiries around factual based content, especially the ones derived from the national syllabus.

Challenges from internal influences

The implementation of the PYP curriculum is highly influenced by teachers, principals, students and management. These factors exist within the school context, thus considered internal factors. One or more participants have mentioned the challenges emerging from these internal factors. The collective and individual perspectives are presented concerning internal influences' potential challenges.

Teachers: Teachers were seen as a primary internal influence on the implementation of the curriculum. Most participants noted that teachers who do not internalize the IB philosophy tend to implement PYP superficially. They also pointed out that teachers' lack of competency and preparation negatively affects the program's effectiveness, directly affecting the students learning. Additionally, quantitative data revealed that teachers' lack of experience posed substantial challenges to implementing the PYP curriculum.

Principals: Some teachers highlighted the challenges posed by the principal's leadership. While some teachers indicated teacher autonomy, some expressed the limitations of teacher autonomy. Emphasizing the need for flexible leaders, the teacher (19) expressed, "You cannot plan everything a week before an inquiry. Say I have to go to Bombay to goa from Monday to Friday, some teachers are focused, and some teachers are wanderers like me. The leadership has to accommodate for types of teachers also. The leadership has to be in adventure mode". This indicated that principals in PYP need to adopt leadership practices that accommodate various kinds of teachers.

Students: Students in PYP are expected to be active learners who can take the initiative in their learning journey. Many participants perceived that the traditional attitude of students, where they expect the teachers to teach everything, is a barrier to inquiry learning. This was explained by the teacher (21), "Getting the students into the mindset of inquiry is a challenge. An inquiry mindset helps us to move ahead in the inquiry. However, mostly the students have the mindset of getting everything from the teachers…this does not work" in the same lines, the teacher (19) added, "I will give an example to explain my challenge. I am a national-level football coach, and my goal is to prepare my team for the international, but I see that the team's basics are not even up to a district level…taking forward is a big challenge".

The quantitative data from the student survey and classroom observation indicated students' activeness. It is important to note that physical activeness and engagement in activities are insufficient for successful inquiries; students need to be intellectually and emotionally active to get the best of inquiry.

Resource management

Time is one of the most critical factors for effective inquiries in PYP. Most participants mentioned time constraints as the major challenge in implementing PYP. As many noted, the inquiries take longer than expected, requiring more time when students want to make deeper inquiries. One of the teachers provided an example, "In inquiry, perspectives are so many, it gets difficult to shrink the inquiry" adding to this, another teacher shared, "If you have limited time, inquiry cannot happen in the truest way. For the child to get into inquiry completely and take the gist of it takes time". Some other teachers were concerned about the lack of time to give personal coaching and counselling to students in need and suggested efficient timetabling in the school.

Another challenge highlighted was human resource management, in specific - teacher attrition. Most participants emphasized retaining teachers in a school because they believed teachers take time to internalize IB practices. The participants pointed out two reasons for teacher attrition, one is due to the change in school leadership, and the other is related to the change in the location of female teachers due to personal reasons.

Management

Many teachers expressed that the school's ambition posed a massive challenge in quality teaching-learning. This was explained by the teacher (12), "Schools, in general, are trying to do nice things…. The real focus on teaching-learning is shifted. Meaningful collaborations are

the urgency, and the school needs to focus on what is important- the quality of teaching-learning has to be the focus", agreeing to this teacher (16) added, "schools are very ambitious; they are running after to be the best, it has accreditations ranking, parents are demanding, and there is a huge time constraint to do everything in school…" further she commented on the upcoming PYP schools in India, " Many PYP schools are new in India. Such schools focus on branding, positioning, doing more, etc. than on teaching and learning". This indicated that the school's priorities on marketing and other aspects to sustain in the competitive market posed a considerable challenge to quality teaching-learning at PYP.

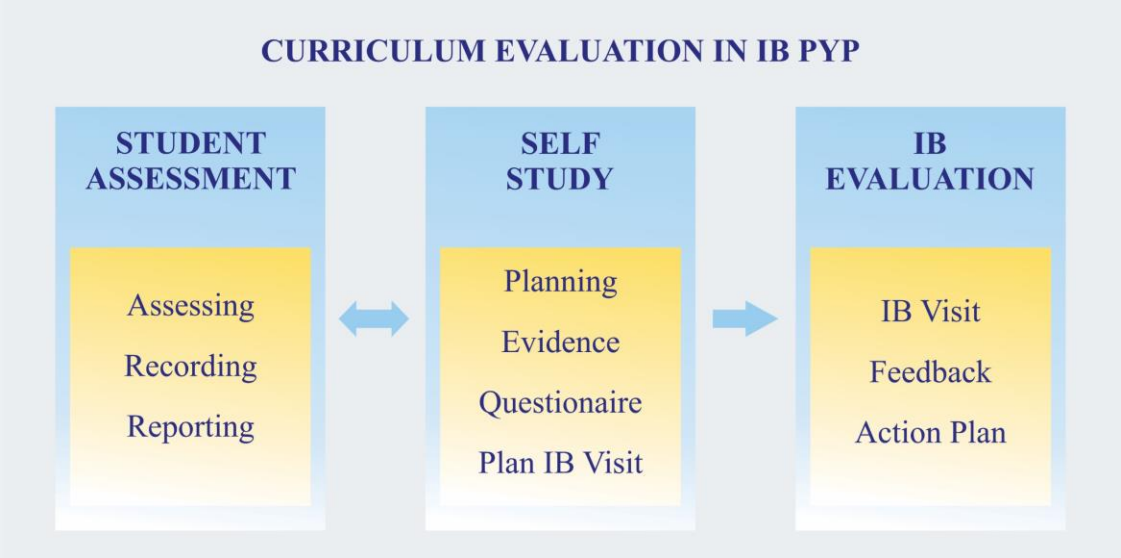
4.4.3 Curriculum Evaluation in IB PYP

Curriculum evaluation in this study is the process in which the school investigated the process and outcome of the curricular and pedagogical practices planned during curriculum development.

Mainly three components were identified under curriculum evaluation 1) Self-study, 2) IB Evaluation, and 3) Student assessment. Figure 4.17 represents curriculum evaluation in IB PYP.

Figure 4.17

Curriculum Evaluation in IB PYP



4.4.3.1 Self Study

Self-study is the most critical aspect of program evaluation by IB, and it is a requirement by the IB for the schools implementing PYP. The researcher identified common practices involved in self-study in the schools. All the participants reported self-study is a collaborative process for over 12-18 months. All the stakeholders- school head, principal, PYP coordinators, team

leaders, teachers, non–teaching staff, students, and parents involved in the process. The common steps described by the participants are presented below.

- Step 1: Planning self-study
- Step 2: Gathering supporting documents
- Step 3: Complete self- study questionnaire
- Step 4: Submit a self-study questionnaire and prepare for an evaluation visit

4.4.3.2 IB Evaluation

Once the school submitted the self-study questionnaire with supporting documents, the IB visited the school to verify its assessment of its implementation of PYP. The purpose of the visit was to verify the assessment carried out by the school to ensure the PYP standards and practices were followed and sustained. This is the mechanism the IB has adopted to maintain the quality of IB schools worldwide. All the participants shared positive experiences with the IB evaluation visit, with over 90 % of teachers reporting that the self-study helped improve their performance.

After the evaluation visit, the IB sends the school a report based on the analysis of the self-study questionnaire, supporting documents and school visit. Participants reported that the report had three aspects, 1) commendations- related to outstanding or innovative practices, 2) recommendations- to guide further development of the program, and 3) matters to be addressed- these are the areas that are not in compliance with IB standards and practices. Most participants perceived that the IB report helped the school validate its practices to improve the PYP implementation.

In summary, it was evident from the responses that the IB evaluation visit did not intend to appraise or assess schools or individual teachers or administrators; instead, the purpose was to determine the effectiveness of the program implemented in the school as described in the school's self-study. This program evaluation model seemed to motivate the teachers and administrators to improve the implementation of PYP.

4.4.3.3 Student Assessment

Student assessment involves the gathering and analysis of data about students' understanding and performance that can inform practice. Assessment practices in PYP identify what students know, understand, can do, and feel at different stages in the learning process (IBO, 2009). The student assessment in PYP has three main components

Assessing: Assessing is related to how teachers discover what students know and have learned. In the PYP schools under the study, summative assessment (SA) and formative assessment (FA) were prominent. The set of age-specific learning outcomes under each unit of inquiry drives the content/area of assessment. The assessment in PYP focused mainly on three areas 1) Knowledge, 2) Skills and 3) Action. Teachers mentioned that they review the topics/concepts under each unit of inquiry- lines of inquiry to categorize the learning outcomes further in terms of what is worth being familiar with, worth knowing, and worth enduring. Based on this categorization, teachers decided what to assess in each unit. Stressing the skill and action elements of learning, many teachers asserted that they plan assessment activities to assess students' skills and actions.

All participants supported assessing Learner Profile in PYP. Most teachers described their use of LP as immersive, interweaving the vocabulary throughout the learning.

In assessing what students know and can do, participants pressed on differentiated assessment practices in PYP as they believed each student is unique and expressed in their ways. Differentiation in assessment was seen in two types; one provided different ways to express their learning, and the other provided different levels of assessment based on students' ability and learning journey.

Most participants reported administering standardized achievement tests and other types of assessments in PYP.

Recording: Recording is an essential aspect of assessment related to collecting data about students learning using relevant assessment tools and strategies. Teachers perceived that a firm grasp of evidence is required to assess students' knowledge, skills and attitudes growth. Participants reported using several tools such as checklists, paper pen tests, rubrics and anecdotes. Most of the teachers were found using anecdotes to record learner profile attributes. Rubrics were widely used in peer assessment. Teachers mentioned various strategies used for assessment, the most common was the observation, where teachers observed the class as a whole or/as an individual student. They perceived that observations were embedded in their teaching and helped them plan. While discussing differentiated assessment, many teachers mentioned using multimodal performance assessment, such as assessing students through role-plays, storytelling, and drawing. However, very few mentioned using open-ended tasks like essays for assessments. All the participants supported the activity-based, play-way approaches to assessment.

Reporting: Documenting and reporting students learning was accorded importance by all the teachers. The most common strategy for documentation was portfolios and reflective journals. Most teachers noted that the portfolios were prepared in collaboration with students. The learner Profile is highlighted in the portfolio. It was gathered from the interviews and observation that portfolios are mainly used for reporting students learning. Reflective journals were also widely used in PYP, where students played a crucial role in keeping a reflective journal. In addition, teachers prepared written reports to share students learning with administrators, parents, students, and teachers. The report included learning on PYP elements like Learner profile, transdisciplinary units, and subject-specific performance. Most of the teachers reported that the principal reviewed these reports regularly and provided feedback for improved learning

Concerns around student assessments

Some of the senior teachers expressed their concern about assessments in PYP. The first aspect pointed out by many senior teachers was related to the assessment of skills and value development in PYP. Teacher (3) raised challenges in finding the evidence for skill and value development, "we do not have the continuum of skill and value development…I do not know if the assessments we give truly capture their skill development…as teachers, we want to know where in the continuum they are …". The second concern raised by the teacher was that while IB assessments focus more on big aspects, compound skills, higher level application or analysis, learning and assessment of basic and straightforward skills are sidelined. Teacher (16) expressed this concern with an example, "One of the assessments activities was- Use the knowledge and skill of measurement and build a house, where the students built a house using thermacoal, cardboard etc., but in this assessment, my objective of finding out how precisely students are measuring was not fulfilled. Moreover, many students in my class do not bother to measure with the highest precision as the assessment is not focused on it." Agreeing with this concern, teacher (11) stated, "the PYP assessments are nice, attractive, and application level. However, I feel there is a compromise in learning and assessment of basic skills". Another teacher (28) in the same line of thought wondered if the majority of students can connect to the big learning outcomes and assessment, "In grade 5, the learning outcome was- students should be able to understand the influence of time and culture on people's life and explain how the poems of Sarojini Naidu, Tagore reflected the society and time. The assessment was based on their presentation; the students had prepared PPT and confidently spoke about the poems and explained…..they did mention that Tagore wrote the poem –where

the mind was without fear when India was not independent ….. However, I could not see students connecting to the bigger question we were expecting…I wonder if they can connect to the learning outcomes at that age".

Another major concern that emerged most commonly about assessment was coping with the trends of standardized testing in India and across the world, as pointed out by a teacher (12), "Can the PYP kids do better in the standardized tests at the national level? Here we give them the flexibility to express themselves and assess differently based on their style and ability, but this is not the case when they go out of PYP..." In the educational context where standardized testing has higher validity for students learning, the data from the study reflected the tension between the IB assessment philosophy and the existing trend of standardized testing.

4.4.4 Pedagogical Leadership

Pedagogical leadership is identified as one of the critical components in curriculum management. The schools implementing the PYP program are expected to shape their leadership to achieve the vision and mission of IB PYP. The present study investigated leadership practices to identify key components and their interrelation. Based on the combined data, a model for pedagogical leadership is created and discussed in the following section. Figure 4.18 represents Pedagogical Leadership in IB PYP.

Figure 4.18

Pedagogical Leadership in IB PYP

Pedagogy is about how students construct knowledge through interactions with learners, teachers, parents, and other external agencies like the community, nation, and the world. In a school context, the learning environment created through the interaction with peers, teachers, and the intended curriculum is considered a micro-learning context; the vision, mission, goals of the institution, and specific institutional practices also impact the learning; this is considered as the meso learning context; parents, local community and broader society are considered as the macro learning context. All these three learning contexts impact students learning directly or indirectly. In this study, pedagogical leadership is referred to as the leadership exercised in the area of pedagogy within the micro, meso, and macro learning context to promote improved student performance, a community of lifelong learners, teacher leadership, inclusivity and sustainability.

It was evident from quantitative and qualitative data that leadership in PYP focused on pedagogy – teaching, learning, and assessment. Principals, PYP coordinators, and teachers as pedagogic leaders exercised leadership to improve the learning contexts to impact the pedagogy positively.

4.4.4.1 Micro-Learning Context

Building Student-Teacher Relationship

Microlearning context in PYP schools is related to how students and teachers interact and build relationships for improved student learning engagement and performance. It was evident from interviews, observations, and focus groups with students that teachers in PYP made considerable efforts to build positive relationships with students. Most teachers perceive that building a positive relationship with students is the first step in inquiry-based approaches to teaching-learning. Teachers asserted that they need to provide a safe and secure environment in which students feel valued and respected for meaningful inquiries to take place in classrooms; as the teacher (3) expressed, "When the new batch comes in, I first start understanding my children, and we develop mutual trust. When my children know I will not scold them if they question or give wrong answers, they are more comfortable sharing their thoughts". This finding aligned with the classroom observation data that showed a high rating on teachers' confidence, communication and ethical behaviour in classrooms (refer to table 4.20). Around 65% of students reported that their teachers gave personal care and attention. Student responses supported this, "I was new to the school, and everything was different, my teacher sat with me daily after the class and personally taught me the things I did not understand, she made me feel very comfortable"; "They care for each child, not just one". Students also highlighted that the encouragement from their teachers helped them perform better in PYP; for instance, a student shared, "Teachers encourage to improve in areas which we lack; they help us overcome fear. Like, I had fear in maths, my teacher encouraged me, she gave me many opportunities to do maths, she never blamed me for mistakes…she had patience and helped me with my problems". This was reflected in the student survey results, where 73 % of students indicated that their teachers praised them for good work.

Overall, teachers as pedagogic leaders appeared to have a positive relationship with students and made efforts to build trust with and among students.

Leading the Curriculum Management

The quantitative and qualitative data indicated that principals, as the head of the pedagogic leadership, actively engaged in the curriculum development, implementation, and evaluation in PYP.

The responses from the interview revealed that the principal's inputs in POI development are valuable, "Our principal herself is an IB evaluator and has a great international exposure; she brings in new ideas to our curriculum"- PYP coordinator (1). The quantitative data supported

this; around 73 % of the participants perceived the principals were knowledgeable about instructional practices, and 65 % perceived that principals were diligent readers of professional literature. The principals played the role of curriculum reviewers, where they positioned the PYP curriculum that fulfilled the parental expectation, national educational demands, and IB curricular mandates.

While discussing the pedagogical inputs from principals, some teachers mentioned that the principal was engaged in classroom teaching and demonstrating new teaching strategies. Some noted that the coordinators primarily conducted classroom observation and demonstrated lessons in the classroom. This clearly explained the diverse response to the statements – 'The principal does not interfere in pedagogical practices of teachers in the school' and 'The principal makes regular classroom observation and provides feedback to teachers' (refer to table 4.4). Overall, both principals and PYP coordinators jointly managed the curriculum in PYP.

Professional Development of Teachers- Building Collaborations

Teachers are the key actors who create a conducive learning environment for students, thus their professional development plays an essential role in shaping the micro-learning context. In the PYP schools, it was found that principals and PYP coordinators were directly engaged in providing continuing professional development for teachers.

The majority of the teachers shared a positive response to the professional development practices in the school. Principals explained the school's commitment to teachers' professional development: "we as a school invest a lot on professional development; we provide good funding for PD". The schools sponsored their senior teachers and PYP coordinators to attend the IB workshops. As per the data, 54 % of teachers had attended category one training, 21 %- category 2 and 21 % category 3, and only 4% did not have IB training. Further, it was found that only 40% of the teachers had international academic exposure, and only 24 % of teachers had an IB certificate in teaching and learning; this indicates that IB certification is not popular in India and the high pricing of these courses might be one of the reasons. It was found that, in India, some regional networks of IB schools and other international school networks conduct workshops on various aspects of PYP practices and innovative teaching practices, and many teachers reported attending these workshops. Along with this, the schools conducted a series of in-house workshops. Principal (1), highlighting the in-house training provided at the school, said, "I conduct two sessions a month for teachers. I would say we are running a teacher training

parallel in the school". Teachers also noted that the workshops included the development of personal skills apart from PYP teaching-learning. Many teachers were allowed to conduct sessions and workshops for teachers to share their skills and knowledge.

Along with the professional development of teachers, building effective collaborations within the teacher community is imperative for successfully implementing the PYP curriculum. PYP coordinators play a seminal role in this aspect; they are the ones who directly interact with teachers and foster collaboration among the teacher community. Data revealed that PYP coordinators had a minimum of five years of experience in PYP and played an essential role in imparting knowledge on IB to all the teachers through constant coaching and mentorship. All the coordinators expressed the need for all teachers to have an in-depth understanding of the PYP curriculum to sustain the quality of teaching-learning in PYP; thus, they adopted peer coaching and one-on-one coaching. Most teachers perceived PYP coordinators as the bridge between teachers and principals who actively build a proactive teacher community.

4.4.4.2 Meso Learning Context

At the meso level, principals exercised leadership to align the school's vision and mission with IB. In the process, the principals, along with other members of the leadership team, set the institutional goals and strategized to internalize IB's mission of international mindedness into the school's vision and goals. Principals played an essential role in restructuring the operations and leadership practices and curricular and pedagogical practices to support the PYP teaching and learning. Resource mobilization was the most important aspect at the meso level. Principals ensured that both material and human resources were available, accessible and utilized to impact teaching and to learn in the school.

4.4.4.3 Macro Learning Context

Parents are one of the key stakeholders in the school system. They impact students learning to a greater extent. The values, beliefs, culture and customs are passed on from parents to the children, and all these factors affect how students perceive the world and construct knowledge. The basic premise of learning in PYP is that children can learn and construct knowledge, and the adults- teachers and parents- are facilitators of learning, not information providers. It was found in the study that traditional parental approaches to teaching and learning and in general education hinder the inquiry learning process in PYP. Teachers asserted that the role of parents in students' learning is crucial, especially at the primary level. Most of the teachers noted that orientation is given to parents on the PYP curriculum and how they can support students

learning. However, teachers expressed that the role of parents in PYP schools is still emerging, and the schools need to take more initiatives to build strong parent relationships to guide them to support students' inquiry process.

School–community partnerships were identified as one of the important aspects of pedagogical leadership. Around 80 % of the participants indicated that principals encouraged community engagement and offered community development services. The community development programs conducted by schools ranged from adopting a school, providing professional services to schools in rural areas, and providing financial aid to schools in rural areas. Principal (1) proudly shared, “all these years, we donated one crore to rural school development”. Teachers expressed that more involvement with the community would be possible with strategic planning by the management. School community partnerships benefit both the school and the community; the principals need to promote partnerships to promote cultural integration, effective resource mobilization, sense of service to the community among students and teachers. Further, the schools need to establish international academic partnerships to create authentic international culture and diversity where students and teachers develop international-mindedness through intercultural understanding.

4.4.4.4 Approaches to leadership

The combined data provided several pertinent findings about the leadership approaches found in PYP schools. The most consistent and common approaches that emerged from the data are discussed in the following section.

Democratic and Collaborative Approach

Both quantitative and qualitative data showed that principals adopted democratic and collaborative approaches to lead the team. Most teachers perceived that building a positive relationship is the core element of leadership. Around 95% of the participants indicated that they shared mutual trust and respect; this was reinforced in the interviews, “my principal trust me, I feel free …I know that someone is there to look after me. I know I can take risks, make mistakes and also confess”- teacher (18). Teachers shared that the PYP coordinators and principals valued their experience and opinions in curriculum management. This is reflected in the degree of teacher autonomy in the schools. The quantitative data indicated a fair degree of teacher autonomy in PYP, where 88 % of participants noted principals’ encouragement in decision-making on pedagogical aspects. Principals adopted democratic approaches to lead teachers in curriculum and pedagogy.

Collaboration emerged as the most important aspect of curriculum management. Collaboration in the PYP context is viewed as a process, an approach for leadership, and a product. Around 95% of the participants noted that principals ensured collaborative and reflective practices for effective curriculum management in the school. Data showed that the principals focused on various levels and degrees of collaboration with different stakeholders.

Distributed Leadership Approach

Around 90 % of teachers perceived that leadership was distributed in the school. Many participants perceived distributed leadership as an effective model to sustain PYP practices in the context of a high attrition rate of teachers and principals. The schools adopted a matrix model for shared leadership with the head of the school and the principal in the primary section and the PYP coordinator and teachers in the secondary section. In general, the pedagogical leadership team consisted of the head, principal, PYP coordinator, team leaders (non-teaching), homeroom teachers, subject specialists, co- teachers. Non-teaching staff was appointed as team leaders/Instructional coaches with teaching experience.

Qualitative data revealed that distributed leadership was generally understood in terms of the distribution of roles and responsibilities among the stakeholders. Many teachers perceived that distributed leadership promoted teacher leadership in the PYP. The quantitative data showed that 90% of teachers were given opportunities to take leadership positions. As explored in the qualitative strand, teacher leadership revealed that teachers' leadership was generally perceived in terms of initiatives taken by teachers for the development of teachers and students in the school. Teachers were provided opportunities to mentor new teachers and conduct professional development workshops.

From the combined data on various components of pedagogical leadership, the key outcomes of pedagogical leadership were identified

- Improved student performance
- Community of lifelong learners
- Teacher Leadership
- Inclusivity
- Sustained Leadership

4.5 CONCLUSION

This chapter presented quantitative data analysis in the first section, qualitative data in the second section, and data integration. Several pertinent findings emerged in both the analysis

and were converged at the interpretation stage along the lines of convergent parallel mixed methods design. The convergence resulted in the development of curricular and leadership models for the PYP context. The convergence provided a comprehensive understanding of how the PYP schools organize their curricular, pedagogical and leadership practices within the IB PYP framework to operate and sustain in the Indian context effectively. Major findings were drawn on various aspects of curriculum management and are presented and discussed in the next chapter.