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ORIGINAL ARTICLE

Effects of a professional development programme on the development of teaching styles

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Effects of a professional development programme on the development of teaching styles

ABSTRACT

The present study examines the influence of faculty development – specifically the Professional Development Programme (PDP) at the National University of Singapore (NUS) – on teaching styles. Canfield and Canfield's Instructional Styles Inventory (ISI) (1988) is used to measure teacher-focused and student-focused teaching styles in sample populations with and without PDP intervention, and analyses are run for all disciplines combined. The findings suggest that the PDP accelerates an overall shift towards student-focused teaching styles. The paper identifies key issues and strategies for promoting faculty development through PDP.

INTRODUCTION

The shift "from teaching to learning" (Barr & Tagg, 1995) is well recognised as critical to delivering quality education (Telford & Masson, 2005; Groccia, 2010). Much effort has gone into differentiating the learner-focused approach from the teacher-focused. In summary:

1. A student-focused approach acknowledges the student's choice and control in the learning process, with the teaching method adapted to facilitate student learning and collaborative learning relationships;
2. A teacher-focused approach is one where the teacher maintains authority and controls the content and learning situation, and students are largely passive consumers of what is delivered to them (O'Neill & McMahon, 2005).

Clearly, the different teaching approaches reflect different underlying conceptions of teaching (Biggs, 1989; Entwistle & Walker, 2000; Sherman et al., 1987) and have different effects on student satisfaction, motivation and attainment (Dunkin, 1986; Murray, 1991). Students adapt their learning approaches as "reactions to the teaching environment" (Biggs & Tang, 2007), and studies confirm that an "environment" promoting a student-focused approach is more likely to encourage a deep approach to learning and the developing of deeper understanding (Marton & Saljo, 1997).

Chism et al. (2002) emphasise that it is imperative to have institutional support as faculty move towards the student-focused approach. Teaching centres of many

institutions have made it part of their mission to advance this paradigm shift, incorporating into their development programmes learning-driven pedagogical knowledge, teaching skills and reflective practice (Gibbs & Coffey, 2000). Findings on the effectiveness of such efforts are mixed and possibly context-dependent; Gibbs and Coffey (2004) report a range of positive changes in university teachers after training, while others (Gilbert & Gibbs, 1999; Weimer & Lenze, 1997) conclude that there is little evidence of training yielding positive impact on teaching.

The Study

This study attempts to ascertain the impact of the Professional Development Programme (PDP) offered by the Centre for Development of Teaching & Learning (CDTL) at the National University of Singapore (NUS). Faculty members recruited with less than three years of teaching experience in higher education are strongly encouraged to participate in the PDP, and its completion is linked to some extent to re-appointment. The Programme consists of a 3-day core module, followed by 16 hours of elective modules and a teaching practicum. The core module focuses mainly on generic teaching principles and practices, while the elective modules focus on more specific aspects of teaching and learning, including skills in facilitating understanding, questioning, using resources, critical thinking, addressing student motivation, course assessment, instructional design and the use of information technology. The practicum requires participants to explore teaching strategies and undertake action research on the use of innovative ideas and strategies in the classroom with a view to publishing the findings.

The present study examines the effects of PDP on faculty members' teaching styles in seven consecutive cohorts of participants. The Instructional Styles Inventory (ISI) (Canfield & Canfield, 1988) was adapted to gather information on the teaching styles of two groups: PDP participants and non-PDP participants. Though there were a number of teaching style assessments, the ISI was chosen for two reasons: firstly, for the purpose of comparison with other studies and, secondly, since the availability of an accompanying learning style inventory will allow for making comparisons between the learning and teaching styles of NUS students and lecturers.

In its original conception, the ISI measures teaching style preferences in four categories – (1) conditions for instruction: preferred situation or context of instruction, (2) areas of interest: preferred kinds of subject matter or objects of study, (3) modes of instruction: preferred manner of presenting new information, and (4) influence: expresses the extent of the conviction that varying or adapting instruction methods will affect learning performance.

To index attitudinal change, participants completed the ISI at two points in time: before the PDP 3-day core module and at the end of the teaching practicum, which marked the completion of the PDP. It was hoped that results obtained will provide insights into: how the PDP has influenced teaching styles of young faculty members at NUS; whether there are differences in teaching styles between members who undergo the PDP and those who do not; and if the teaching experience prior to joining NUS has a bearing on the outcomes of this programme. It was hoped that the findings will help to prove or disprove the following:

1. teaching styles become more student-focused after PDP intervention.
2. teaching styles become more teacher-focused over time without a PDP intervention;

It was recognised that a questionnaire that employs self-reporting has limitations; responses could reflect intent more than actual practice, as highlighted by Ramirez (1998). Hence, qualitative feedback was obtained subsequent to PDP participation to further probe into participants' perceptions of the PDP experience, as well as to substantiate results from the survey. This provided some confirmatory evidence that many participants indeed adopted new techniques, and employed a greater variety of new and innovative teaching methods.

METHODOLOGY

Non-PDP Control Groups and PDP Experimental Groups

Respondents (both non-PDP and PDP participants) were sampled from various faculties: Arts and Social Sciences (n = 76), Science (n = 70), Medicine and Dentistry (n = 69), Engineering (n = 56), Computing (n = 30), Business (n = 23), Design and Environment (n = 9), Law (n = 9), Centre for English Language Communication (CELC) (n = 9) and the University Scholars Programme (n = 1). The PDP 'experimental' or intervention groups (EG) comprised 231 PDP participants who attended PDP between July 2001 and February 2004. There were seven groups: EG1 (n = 40) in July 2001, EG2 (n = 42) in February 2002, EG3 (n = 27) in July 2002, EG4 (n = 22) in February 2003, EG5 (n = 28) in August 2003, EG6 (n = 28) in November 2003 and EG7 (n = 41) in August 2004.

Two Control Groups (CG) consisting of teachers without PDP training were surveyed in December 2001: CG1 (n = 57) comprised teachers with three to five years of teaching (mostly assistant professors) while CG2 (n = 67) comprised teachers with 5 to 10 years of teaching (mostly associate professors). Groups used for this analysis were kept to those sampled within the same period, in AY2001/2002.

The initial analysis of the effects of teaching experience on teaching styles involved comparing pre-PDP teaching styles of a group combining EG1 and EG2 (low experience), with teaching styles of CG1 (moderate experience) and CG2 (high experience). A second analysis compared pre- and post-PDP teaching styles of experimental groups for each academic year as well as the combined group (EG1-7).

Design: Between-Groups and Within-Groups Tests

To explore the shift in teaching styles, a completely 'between-groups' design was used for the group without PDP intervention while a completely 'within-groups' design was used for the group with PDP intervention. The teaching styles of PDP participants before the start of the PDP programme were compared to their teaching styles when they came for the final practicum presentations. The pre- and post-PDP interval ranged between six months and two years.

Instrument

Conceptual selection and re-organisation of ISI scales: For the student-focused approach, Canfield's *ISI a- and b-influence* scales (measuring faculty belief in adapting teaching methods to students' learning) along with the following ISI scales were adopted:

instructor	*belief in having more informal and helpful, non-interrogative relationships with students;*
goal-setting	*belief in letting students set their own goals;*
independence	*belief in letting students decide on how to attain learning goals; and*
peer	*belief in fostering good collaborative learning relationships amongst students.*

Likewise, for teacher-focused approach, the *ISI c- and d-influence* scales (measuring faculty belief in students adapting their learning to teachers' methods) were adopted along with the following scales:

authority	*belief in their authority in controlling learning situations;*
detail	*belief in providing detailed and concrete information regarding assignments and expectations;*
organisation	*belief in organising teaching in a logical, orderly manner; and*
competition	*belief in encouraging competition amongst students.*

Re-organisation of the items was necessary as some items were not conceptually related to their original associated scales (Table 1).

From Ipsative to Normative

Canfield's (1988) ISI uses an ipsative scale – a forced-choice technique that requires respondents to rank items such that the strength of one preference is expressed not in absolute terms, but in relation to the strength of the individual's other preferences. Each respondent's total score equals the sum of the ranked data (Greer & Dunlap, 1997) and hence if a respondent's score moves one point up on one scale, then it must move one point down on another. However, there are two psychometric limitations. The first limitation relates to the estimation of validity (Piedmont et al., 1992) where scales are dependent on one another, and data cannot be properly analysed with the usual correlational procedures. Since the mean inter-correlation of individual scales tends to be negative, the mean correlation of all the scales with any external variable will approach zero (Hicks, 1970). The second limitation relates to inter-individual comparisons as the frame of reference is inherently intra-individual. Any inter-individual comparisons will be misleading as two individuals with identical scores on the scale may differ markedly in the absolute strength of their style.

Therefore, a normative version was developed where respondents rate the items on a Likert scale of 1-7, indicating how strongly they believe in each item independently. The scores closely reflect the absolute level of an attribute within an individual and provide more precise information about the actual level of trait strength, although not always indicating the respondents' preferences among traits of nearly equal strength. A major improvement with this method is that comparisons across individuals become meaningful.

Reliability Analyses

Reliability analyses were performed on the selected original ISI scales and their adapted counterparts, using combined data from all PDP and non-PDP participants, involving only pre-PDP responses for the former group (Table 2). The adapted scales generally show substantial increases in reliability, compared to their original versions, except the new *a-influence scale* for which reliability decreased, although remaining at an acceptable value.

Table 1. Original and adapted ISI scales and items, and their scale reliabilities

Scale	Items from original scale	N	Alpha	Items in adapted scale	N	Alpha
Student-focused						
A-influence*	5a,10a,15a, 20a,25a	349	0.607	5a,10a,15a,20a, 20b,20c,25a	349	0.587
B-influence	5b,10b,15b, 20b,25b	346	0.420	(combined with A-influence)	–	–
Instructor**	2a,7a,12a, 17a,22a	350	0.596	2a,7a,12a,17a	351	0.648
Goal-setting***	1c,6c,11c, 16c,21c	337	0.613	1c,2c,7c,11c,12c, 16c,17c,21c,22c	336	0.806
Independence	2c,7c,12c, 17c,22c	345	0.642	(combined with goal-setting)	–	–
Peer****	1a,6a,11a, 16a,21a	342	0.532	1a,10b,11a,21a	347	0.647
Teacher-focused						
C-influence#	5c,10c,15c, 20c,25c	348	0.410	5c,5d,10c,10d,15c, 15d,20d,25d	346	0.758
D-influence	5d,10d,15d, 20d,25d	346	0.745	(combined with C-influence)	–	–
Authority##	2d,7d,12d, 17d,22d	347	0.428	2d,12d,17d	353	0.519
Detail###	2b,7b,12b, 17b,22b	348	0.661	2b,7b,12b, 17b,22b	348	0.661
Organisation####	1b,6b,11b, 16b,21b	342	0.379	1b,11b,16b,21b	347	0.597
Competition	1d,6d,11d, 16d,21d	335	0.470	(not used)	–	–

* All *a-influence scale* items, *b-influence scale* items except 5b, 10b, 15b and 25b (not directly related to teachers adapting their methods to students) and item 20c (measuring the importance of faculty adaptation to students) from *c-influence scale* were combined.

** Item 22a (measuring both interest in the subject matter being taught, as well as a lack of interest in students) was removed.

*** All *independence scale* items were added to *goal-setting* except for item 6c (related to the importance of assessment methods).

**** Items 6a and 16a (related to fostering generally good feelings amongst students with little mention of collaborative learning) were removed from *peer scale*, while item 10b (a better measure for collaborative learning) from *b-influence scale* was added.

\# Items 20c and 25c (related to teachers adapting to students) were removed. Although item 10c appears related to teachers adapting to students by calling on them more, it implies that students were "forced" to adapt, thereby making it relevant. All items from *d-influence scale* were retained for their direct relevance.

Items 7d and 22d (related to having high standards and being respected rather than controlling students' learning) were removed.

All items were retained

Item 6b (related to assessment in relation to the course than any specific relation to the general organisation) was removed.

The *competition scale* was dropped as the items (with the exception of 21d) do not explicitly measure the importance of encouraging competition amongst students.

Table 2. Correlations between adapted ISI scales

Adapted scale		Goal-setting	A-influence	Instructor	Peer	Detail	Organisation	Authority	C-influence
Goal-setting	r	1.000	–	–	–	–	–	–	–
	N	336	–	–	–	–	–	–	–
A-influence	r	0.417	1.000	–	–	–	–	–	–
	N	334	349	–	–	–	–	–	–
Instructor	r	0.340	0.426	1.000	–	–	–	–	–
	N	336	347	351	–	–	–	–	–
Peer	r	0.467	0.420	0.502	1.000	–	–	–	–
	N	335	346	345	347	–	–	–	–
Detail	r	0.118	0.320	0.354	0.298	1.000	–	–	–
	N	334	343	347	341	348	–	–	–
Organisation	r	0.038	0.258	0.379	0.296	0.482	1.000	–	–
	N	336	344	344	345	341	347	–	–
Authority	r	0.147	0.146	0.277	0.267	0.500	0.367	1.000	–
	N	336	348	351	346	348	346	353	–
C-influence	r	0.033	-0.037	-0.031	0.012	0.179	-0.027	0.326	1.000
	N	332	346	344	344	340	342	345	346

Correlation analyses were also performed between the adapted scales and five clusters of mutually correlated scales (≥0.3) can be observed. The clusters were arranged in a sequence such that the difference in constituent scales from one cluster to the next is minimal.

first cluster:	*a-influence, instructor, peer, goal-setting scales;*
second cluster:	*a-influence, instructor, peer, detail scales;*
third cluster:	*instructor, peer, detail, organisation scales;*
fourth cluster:	*detail, organisation, authority scales;*
fifth cluster:	*c-influence, authority scales.*

The majority of the scales in the first and second clusters are those proposed to measure student-focused styles while those in the fourth and fifth clusters are those proposed to measure teacher-focused styles.

However, it should be noted that the third cluster suggests some overlap between the two proposed sets of scales, as it constitutes an equal number of scales from both sets, in the form of the *instructor*, *peer*, *detail* and *organisation scales*. This is perhaps because these four scales measure attitudes towards more external and practice-oriented aspects of teaching styles, in terms of the kinds of practices used to create the learning environment. Although the *instructor* and *peer scales* do measure more student-focused styles, the *detail* and *organisation scales* measure more teacher-focused styles. One type of practice can also appropriate the other type in its execution, hence resulting in the observed correlation between the scales. In contrast, the *a-influence*, *goal-setting*, *c-influence* and *authority scales* may measure deeper and more internally held aspects of teaching styles that are less likely to be correlated.

To illustrate the possible relationship among all the scales as indicated by the correlations, high scores on the *a-influence* and *goal-setting scales* may reflect a general attitude towards allowing students' greater control over their learning. This could be achieved through building helpful relationships with students and encouraging collaborative learning amongst them. Likewise, high scores on the *c-influence* and *authority* scales may reflect a general attitude towards maintaining the teacher's control over the learning environment. This could be achieved through giving more details about expectations and requirements, and organising teaching around such details.

In summary, the reliability checks and correlation analyses do support the adapted scales as reliable measures of teaching styles that are in turn related to either student-focused or teacher-focused teaching. Within each group, some scales are more related to general attitudes towards who controls learning, while

others are more related to the practices used to create the learning environment. Scales related more to the practices used to create the environment are more likely to be correlated with one another across the student-focused vs. teacher-focused dichotomy despite belonging more to one side, as they reflect practices that may appropriate one another in execution.

RESULTS

Analyses of the Overall Sample

Teaching experience (without PDP): A series of one-way ANOVAs was conducted with each adapted scale as a dependent variable. The independent variable was teaching experience (without PDP), comparing the mean pre-PDP responses for the group combining EG1 and EG2 (low experience), with the mean responses from CG1 (moderate experience), and those from CG2 (high experience). Descriptive statistics are summarised in Table 3.

Table 3. Descriptive statistics for analysis of effects of teaching experience (without PDP) on teaching styles

Adapted scale	**Amount of teaching experience (For instructors sampled in 2001-2002)**								
	None / Low (< 3 years) (EG1 and EG2)			**Moderate (3 to 5 years) (CG1)**			**High (>5 to 10 years) (CG2)**		
	N	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**
Student-focused									
A-influence	80	5.038	0.826	57	4.884	0.715	67	4.987	0.718
Instructor	82	5.509	0.804	56	5.254	0.906	67	5.646	0.875
Goal-setting	77	4.889	0.803	52	5.035	0.907	63	5.162	0.842
Peer	80	4.875	0.948	55	4.814	0.978	66	5.174	0.968
Teacher-focused									
C-influence	80	2.978	0.902	56	3.199	0.923	66	3.223	0.961
Authority	82	4.606	1.050	57	4.684	1.026	67	4.930	1.012
Detail	82	4.961	0.859	54	5.044	0.887	66	5.261	0.883
Organisation	80	5.906	0.750	55	5.759	0.753	65	6.023	0.615

Significant differences between group means were found for the *instructor scale*, F (2, 202) = 3.242, $p < .05$. Independent samples *t*-tests between the groups found that the highly experienced group had a significantly higher mean score than the moderately experienced group, t (121) = -2.429, $p < .05$. This suggests that without PDP intervention, teachers will eventually subscribe to the importance of helpful and less didactic teacher-student relationships.

PDP intervention: A series of pair-wise *t*-tests was run separately for groups (EG1, EG2, EG3, EG4, EG5, and EG6) for each of the adapted scales. The independent variable was PDP intervention that compared pre- and post-PDP mean scores for the PDP intervention groups. The analyses were also run for all PDP intervention groups combined (EG1-7). Descriptive statistics are summarised in Table 4.

For EG1 and EG2, post-PDP mean scores were significantly lower than the pre-PDP mean scores on the *instructor scale*, t (22) = 2.775, $p < .05$. For EG3 and EG4, post-PDP mean scores were not significantly different from pre-PDP mean scores on any of the ISI scales. For EG5 and EG6, the post-PDP mean score was significantly lower than the pre-PDP mean score on the *organisation scale*, t (24) = 2.700, $p < .05$ but significantly higher on the *c-influence scale*, t (24) = -2.030, $p = .054$. With all the PDP intervention groups combined, EG1-7 (Table 4), the post-PDP mean score was significantly lower than pre-PDP mean score on the *instructor scale*, t (72) = 2.511, $p < .05$ and on the *organisation scale*, t (71) = 1.988, $p = .051$. Summing up, these results suggest that the PDP participants are uncertain about the importance of helpful and less didactic teacher-student relationships, and perhaps about highly organised teaching as well.

Of the 196 respondents requested to fill in the qualitative survey, there was a return of 89 responses (approximately 45%). The survey questions probed the impact of PDP on participants' mindset, practice and goals in teaching. For the question on how PDP had changed their mindset towards teaching: 32.6% of the respondents indicated a shift towards student-centred teaching, 11.2% appreciated the importance of teaching, 7.9% adopted alternate teaching approaches, while 14.6% indicated other factors like having a clear roadmap, the need for continual improvement, self-reflection, and the license to innovate and understand possible challenges. However, 9% of the respondents felt that PDP did not make significant changes to their mindset while there were 12.4% who felt that PDP had reinforced their beliefs regarding the purpose of teaching (Fig. 1).

When asked to comment on how PDP effected a change in their practice of teaching 13.5% indicated a shift towards a student-centric approach, 22.5% indicated adoption of methods that promote active learning, 5.6% promoted independent learning techniques, 23.6% adopted new and varied styles and

Table 4. Descriptive statistics for analysis of effects of PDP on teaching styles

Adapted scale	N	Pre- vs. Post-PDP			
		Pre-PDP		Post-PDP	
		Mean	SD	Mean	SD
(EGs that started in July 2001-June 2002), EG1 and EG2					
Student-focused					
A-influence	22	5.026	0.754	4.773	0.798
Instructor	23	5.413	0.828	4.989	0.887
Goal-setting	22	4.838	0.987	4.621	0.889
Peer	22	4.773	1.096	4.784	0.860
Teacher-focused					
C-influence	22	3.085	0.923	3.068	0.661
Authority	23	4.536	1.048	4.565	0.615
Detail	23	4.835	0.890	4.896	0.942
Organisation	23	5.717	0.896	5.663	0.814
(EGs that started in July 2002-June 2003), EG3 and EG4					
Student-focused					
A-influence	19	4.970	0.571	5.023	0.455
Instructor	19	5.790	0.742	5.605	0.555
Goal-setting	18	5.136	0.615	4.914	0.683
Peer	19	4.855	0.948	5.053	0.930
Teacher-focused					
C-influence	19	2.993	0.769	3.059	0.766
Authority	19	5.105	0.930	5.035	0.823
Detail	19	5.516	0.994	5.232	0.725
Organisation	18	6.028	0.618	5.986	0.496
(EGs that started in July 2003-June 2004), EG5 and EG6					
Student-focused					
A-influence	25	5.040	0.709	5.291	0.679
Instructor	25	5.850	0.771	5.760	0.542
Goal-setting	23	4.913	0.851	5.019	0.829
Peer	25	4.990	0.928	5.050	0.673
Teacher-focused					
C-influence	25	2.950	0.657	3.265	0.877
Authority	25	5.147	0.872	4.973	0.713
Detail	23	5.339	0.895	5.357	0.708
Organisation	25	6.270	0.473	5.960	0.562
Pre- vs. Post-PDP (All EGs from July 2001-June 2004 combined), EG1-7					
Student-focused					
A-influence	72	5.012	0.672	5.050	0.671
Instructor	73	5.658	0.790	5.445	0.765
Goal-setting	69	4.966	0.820	4.900	0.815
Peer	72	4.882	0.943	4.972	0.782
Teacher-focused					
C-influence	72	3.005	0.779	3.149	0.772
Authority	73	4.918	0.970	4.849	0.741
Detail	71	5.203	0.925	5.158	0.784
Organisation	72	6.007	0.703	5.854	0.632

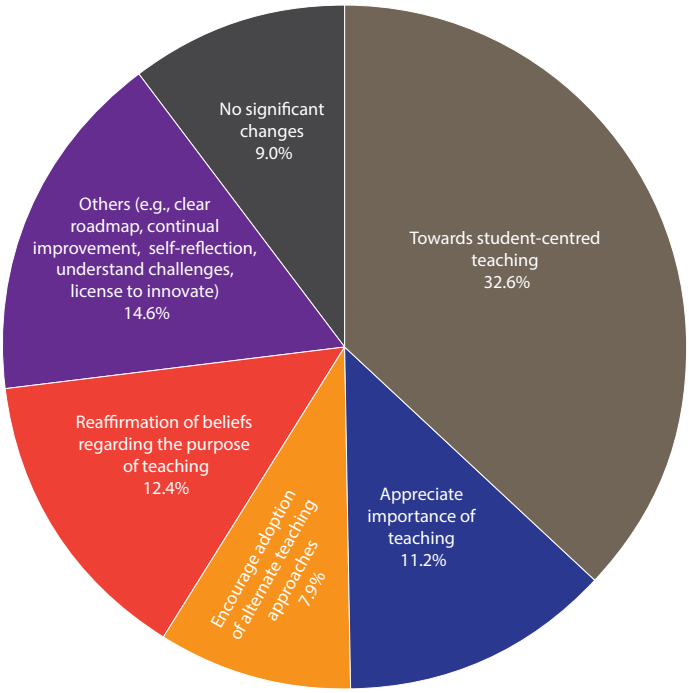

Fig. 1. The impact of PDP on the participants' "mindset in teaching".

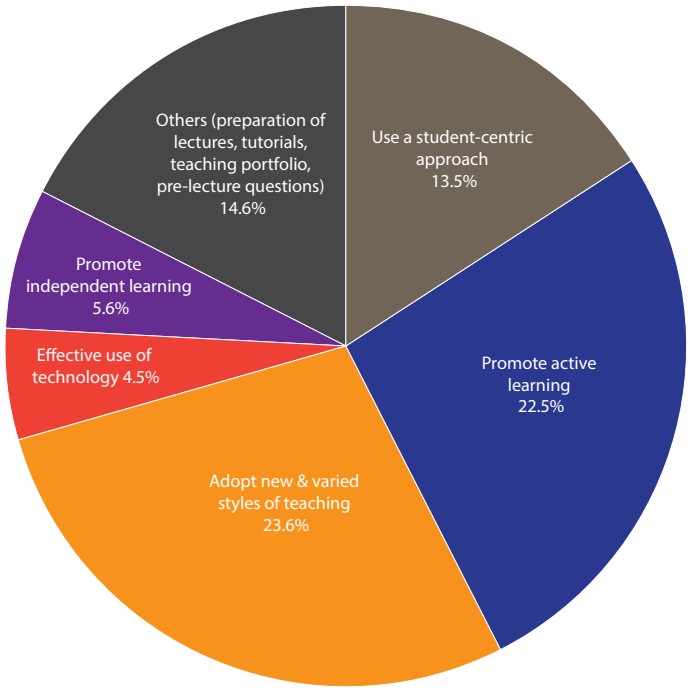

Fig. 2. The impact of PDP on the participants' "practice of teaching".

methods of teaching, 4.5% specified the use of technology and 14.6% indicated that the programme prompted changes in the preparation of lectures, tutorials, teaching portfolio and pre-lecture questions (Fig. 2).

DISCUSSION

Teaching Styles Become More Student-Focused After PDP Intervention

The hypothesis is supported to a certain extent. While there is a decrease in the organisation scale (measuring a T-focused style) it is not quite statistically significant. Furthermore, it should be noted that there is no increase in student-focused teaching styles, as measured on the *a-influence*, *instructor*, *goal-setting* or *peer scales*, and findings as measured on the instructor scale suggest that, on the contrary, participants are less certain about the importance of S-focused style. However, these findings are qualified by the data from the qualitative survey which shed more light on participants' perceptions of their experience of the PDP and its impact on their teaching styles and approaches.

It is fairly clear that learning-centred teaching and learning seems to be the most significant outcome of the PDP programme as indicated by the qualitative comments. However, a very small percentage of the participants indicated that though their focus has shifted more towards what students learn rather than what they teach, they were not sure if and to what extent that change is attributable to PDP rather than teaching experience. The feedback – a sample of which is offered below – strongly indicates that the PDP effected positive changes in mindset and was to varying degrees a transformative experience:

> *"PDP emphasized a lot on a teacher being a facilitator of learning – a concept which is important and which was not clear to me before PDP."*

> *"PDP has significantly changed my mindset in teaching. After PDP, I realised that teaching is not only to instill knowledge, but, more importantly, to engage and interact with students."*

> *"PDP was useful in setting the tone, mindset and goals of teaching very early in my career. One thing that has stuck with me now since the PDP was the focus of being 'student-centred' from being 'teacher-centred', and the shift from just knowing facts to inculcating higher level learning such as critical thinking, questioning."*

> *"I feel that it was good that I went to PDP before starting my teaching assignments in NUS. It would have been difficult to change my mindset if I would have started my teaching before PDP training."*

> *"What I liked about PDP was that it was the first formal exposure I had in the theory of education – prior to that it was only by reading articles. Some of the practical examples/demonstrations during the PDP were helpful."*

> *"I started off my PDP programs as a skeptic. But when I tried things that were mentioned in the PDP program in subsequent seminars, they worked well."*

> *"I have to admit that PDP at least contributed to a fundamental mindset change for me... PDP also left me with a positive sense of how teaching can make a difference."*

> *"PDP forced me to stop thinking so much about <u>what</u> to teach – and to focus instead on what I wanted to achieve and <u>how</u> to go about this."*

> *"I am encouraged to do things differently if they help to improve students' learning. It is the confidence and support which I gained from PDP that matter the most."*

> *"Since I had to teach only 4 weeks after the PDP it did only help a bit in the first course but helped me in the latter courses. Especially discussions with the PDP staff helped me clear my thoughts on teaching."*

PDP had a significant impact on participants' mindset, which enabled a move toward student-centred teaching with a shift from just knowing facts to inculcating higher level learning such as critical thinking and questioning in students; encouraged adoption of alternate teaching approaches; provided a clear roadmap; clarified questions and doubts on new educational trends; stressed the need for continual improvement; encouraged self-reflection; and provided a license for young academics to innovate and to understand the possible challenges.

Moreover, a number of these respondents also expressed that they came to view teaching in a more positive light with respect to research at the University, with one respondent stating candidly, "*Before I thought I was a researcher mainly,*

and then a teacher. But teaching becomes more important to me now." It was also confirmed that through stimulating discussions and seminars, PDP shed light on the importance of teaching, systematic teaching methods and techniques, good practices and examples to facilitate active and independent learning, and that it thereby allowed young academics to become better teachers.

The shift in mindset (from lecturer-centred to student-centred) is revealed by the following selected comments from respondents:

> *"I can certainly say that the PDP stimulated me to think about just who my students are and what their expectations may be."*
>
> *"I try to move away from delivering information towards letting the students find the information for themselves."*
>
> *"The big message I took from the program was that students need to be weaned from a passive approach to learning and an unhealthy focus on exams to a more critical and proactive approach."*
>
> *"Assimilate the concept of student-centered learning. That in order for students to learn more, they should be encouraged to discover knowledge on their own, with guidance from the teacher."*
>
> *"Previously, I wanted students to understand me. Now, I understand my students and deliver."*
>
> *"That teaching is no longer about the imparting of knowledge – the emphasis seems to be shifting towards how to make students (motivate?) learn on their own."*

Many participants also remarked that the PDP exposure encouraged them to adopt new techniques and employ a greater variety of innovative teaching methods.

> *"It has provided some best practices of some of the good teachers that it has helped me to become a better teacher myself. I have also learned from PDP about the techniques of teaching large classes vs smaller classes which are very useful in teaching."*
>
> *"So far, I've always considered my role to involve getting students interested and curious about the materials, I would say not much. But the PDP has encouraged me to try out different teaching strategies to achieve my goal."*

"I now practice various means of delivering lectures, apart from just lecturing myself. I found that those techniques learned from the PDP are very useful and effective in my daily teaching exercise."

"PDP has helped in giving me more confidence in daring to try new teaching methods or styles in my practice of teaching."

"The PDP exposed me to various approaches to teaching and in this way has encouraged me to be more innovative in my approaches to teaching. It was particularly valuable to gain insights into the approaches taken by lecturers in various faculties."

"I have incorporated some new methods into my teaching process. I do think this course gave us a lot of examples to facilitate active learning."

It was also important to note that respondents with no change in mindset/goals after having attended the PDP were those whose goals in teaching were generally in line with the PDP's – and ultimately, the University's – i.e., with a focus on student-centred learning.

"In a paradoxical way I think the PDP program has stimulated me even more so to approach "teaching" in a dynamic way. So, I would probably say that the PDP strengthened rather than changed my teaching goals."

"PDP confirmed many of my ideas/views in regards to approaches to teaching at a university. It also highlighted some differences in the approaches taken by fellow participants."

"I have always had a student-centred approach to teaching and I do not think that my mindset as such has changed. If anything attending the PDP course reaffirmed my view on teaching."

"PDP basically helped to solidify the ideas that I already brought and gave me encouragement by putting me in touch with like-minded teachers. I see it as a way to signal the university's commitment behind excellence in participatory teaching."

"Strengthened belief that teaching must have clearly defined goals, and these goals should be communicated clearly to students."

"I have always wanted to teach to challenge the best students will being inclusive of the below average students. PDP has reinforced

that aim of mine."

"I was already very committed to the participatory approach before. But again, I feel reinforced and happy that it overlaps with the university's agenda."

"Basically, PDP has not changed my mindset, practice & goals in teaching but has reinforced my beliefs in teaching the non-traditional ways (not spoon feeding the students)."

In a recent study by Pfund et al. (2009), the participating faculty reported that they created more effective, learner-centred environments using proven, effective instructional strategies after participating in workshops. It was encouraging to note that the PDP similarly played a significant part in enabling participants to make changes to their practice in shifting towards a learning-centred teaching and learning through activities that promoted active and independent learning. Participants gained the confidence to adopt new methods (e.g., buzz groups, role-playing, small-group techniques) and varied styles of teaching along with effective use of technology to assist in the preparation of lectures, tutorials, teaching portfolio, design of pre-lecture questions, and assessment. The use of technology (PowerPoint, video clips, movies, animations), classical publications (that highlight to students exciting stories in the respective research field), more class discussion and questions (through class presentations and role-play), new assessment techniques (written reports on a chosen topic rather than a close book examination), after-class evaluation techniques (for improvement) were cited as being employed by the participants. Participants also indicated that the more effective use of questioning techniques engaged and stimulated their students to ask questions, weaning them away from spoon-fed teaching to the Socratic Method. Respondents noted that these techniques empowered students to eventually answer the questions themselves.

While these comments were reassuring, a few participants gave suggestions for further refinement of PDP. It was pointed out that: 1) the approaches and techniques offered were not suitable for their class sizes; 2) content was not discipline-specific; 3) students were not receptive to new approaches to teaching, especially given their focus on grades. These comments provide additional insight into faculty members' views of the PDP programme that was not captured by the Canfield ISI, and strongly support the view that the PDP has contributed positively to developing/reinforcing student-centred teaching among junior faculty members.

Teaching Styles Become More Teacher-Focused Over Time Without PDP Intervention

This hypothesis is not supported by the findings as the general 'between-groups' analyses of teaching experience (without separation by disciplinary orientation) found no increase in teacher-focused teaching styles as measured on the *c-influence*, *authority*, *detail* or *organisation scales*, and no decrease in student-focused teaching styles as measured on the *a-influence, instructor*, *goal-setting* or *peer scales*. The contrary is suggested through the findings for *the instructor scale* (measuring a student-focused style). This could perhaps be attributed to the fact that teachers' experiences of interacting with students and understanding their needs could make them more aware of the importance of the student-focused style even without intervention.

CONCLUSION

In summary, the results confirm that the PDP has a positive influence on its participants' teaching styles and in effecting a shift to student-centred teaching; in general, participants become less teacher-centred. While it is possible that the shift might have occurred over time without intervention, it may be claimed that PDP served to accelerate the change. While the degree of change is moderate, it is not insignificant. The moderate change is not surprising; a major change after the relatively short programme would be an unrealistic expectation. Postareff et al. (2007) indicated that it takes at least a year for the effects of pedagogical training to emerge, and implied that it is only after fairly extended pedagogical training that the shift from a teacher-centred to a student-centred approach is evident.

The findings offer some useful suggestions for improving the efficacy of the PDP. One suggestion is to place greater emphasis on collaborative learning. Brody (2007) proposes collaborative learning as a cohesive approach to faculty development and recommends the "learner-centered teaching and learning" paradigm. A review of research articles by Steinert et al. (2006) highlights the importance of participants applying what has been learned during and after the intervention through working with their peers. Effective faculty development would promote and facilitate such collaboration which is likely to enrich understanding of the principles of teaching and learning and provide support in the practice of teaching through learning from peer experiences. The PDP promotes the exchange of information and ideas amongst participants and facilitators, and the practicum component emphasises experiential learning and prompts participants to develop their teaching (and by extension, enhance

student learning) through experimentation, critical reflection, discussion with colleagues, and documentation. The feedback confirms that such collaborative learning creates deeper understanding about student learning and the importance of teaching in higher education.

The feedback also suggests that the PDP could do more to encourage participants to reflect on how their respective disciplines are taught, possibly questioning if the traditionally held paradigms of their discipline are learning-centred. It could also make more purposive effort to clarify that though highly organised teaching has its use and may be useful where the teacher needs to have greater control of the learning environment, it should be accompanied by a non-authoritarian approach which would allow for student involvement, enabling them to take charge of their own learning, and eventually empowering them.

Arising from the overall analyses, it may be concluded that the PDP would be enhanced by adopting a two-prong approach:

1. actively promote student-focused approaches such as adapting to students and involving students in identifying their goals, and drawing attention to specific practices, such as creating helpful, facilitative teacher-student relationships, and encouraging collaborative learning amongst students;

2. focus not only on decreasing teacher-focused approaches (especially those related to deeply-held attitudes towards control, such as expecting students to adapt to teachers, and controlling the learning environment) but also those related to specific teaching practices (such as conveying clear expectations and requirements).

Greater emphasis should also be placed on encouraging participants to be mindful of the gap between theory and application, between espoused theory and theory-in-use. Participants should be encouraged to question seemingly fixed notions of the academic environment and through reflective practice attempt to re-shape the environment to be more consistent with student-centred teaching.

This study has yielded some useful information, but in order to make the evaluation of the PDP more effective and meaningful, revisions might be made to incorporate discipline specific approaches in the design and implementation. Other means could also be explored to see if they might yield a more systematic and rigorous method of assessing the impact of faculty development on teaching/learning. One possibility would be to study the relationship between changes in faculty members' teaching behaviors and learner outcomes and to monitor any resultant improvement in student performance. Evidently, further investigations would be useful. This study provides a foundation for them. It offers also a basis

for potentially productive comparisons with findings of studies undertaken at other institutions with a view to collaborative learning that would enhance the effectiveness of faculty development.

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