Leadership Issues When Sustaining Changes in Physics Teaching in Malta

Through Professional Learning Communities

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Abstract

This study proposes having Physics Professional Learning Communities (PLCs) in Maltese schools wherein teachers work together in their school setting as a means of ongoing professional development throughout the scholastic year. It considers the leadership issues that leaders in Maltese education (particularly secondary school principals) face in developing effective Physics PLCs. A mixed method approach was used to investigate leadership issues. Interviews were conducted with three school principals in Catholic schools adopting a Physics PLC and two Ministry Officials responsible for Physics teaching to open up to a wider perspective relevant to State Schools in Malta. A sample of Physics teachers in State, Catholic and Independent schools also completed a questionnaire asking about their willingness to share their resources and classroom experience with colleagues. The findings suggested that this framework could potentially be adopted in Maltese schools for teachers’ ongoing professional development - most Physics teachers answered favourably to adopting sharing only within their own school on the various aspects of teaching. School principals showed that their input, especially in the initial stages of the PLC formation, was important. However, the study also established the need for ongoing support by the Senior Management Team (SMT) in a school, for teachers in a Physics PLC to be able to meet regularly.
during the scholastic year. This support includes a common slot in teachers’ time-table, available premises and a shared leadership attitude in the school wherein teachers could themselves act as leaders of change through their teaching and initiatives. It was therefore concluded that it is possible to adopt the PLC framework in Physics teaching in Malta. Since a number of these teachers also teach other Science subjects and or Mathematics this framework could also be applicable to these subjects. When teachers are empowered to work together in their school, then it was established that the output they produce is superior to the sum of work which each one can do individually. Even if adopting this change is resisted initially by some teachers, in time, experience in Maltese Catholic schools revealed that it led to better students’ attainment in Physics in that school.

**Keywords:**

Leadership issues; Professional Learning Communities; Professional Development; shared leadership
Introduction

Teaching is charged with the task of creating human skills and capacities for societies to survive and succeed in the age of information (Hargreaves and Lo, 2000:1). In developing countries (like Malta) teachers are expected to build learning communities, create the knowledge society and develop capacities for innovation, flexibility and commitment to change – essential for economic growth in this century (ibid.). Changes in teaching pedagogy in Malta are imminent, following the publication of the National Curriculum Framework (MEE, 2012) and the Learning Outcomes Framework (MEE, 2015). For the change to occur in practice (Fullan M., 2008:31) a program of Physics teachers’ retraining is needed on new pedagogies aiming to prepare students for the needs of the job market and ‘to lead productive lives in the twenty-first century’ (Hargreaves, 2003:100). In the process, ‘ambivalence and uncertainty’ (Fullan M., 2008:23) are expected from teachers since coverage of some Biology and Chemistry will be required. The PLC, as a framework within the school setting, could offer teachers mutual support and help in various aspects of Physics teaching, requiring teachers appreciating ‘the premise of improving student learning by improving teaching practice’ (Vescio V. et al., 2008:82) if they collaborate and share ‘knowledge-OF-practice’ (ibid:89) with colleagues.

This study aimed to understand perspectives of leadership roles:

(i) in three Catholic schools running a Physics PLC and
(ii) at the Education Division for a wider perspective

on what keeps teachers of Physics working together. A sample of Physics teachers from different schools was consulted to check on their willingness to be participants of a PLC. The two parts
of the study enabled understanding for consideration of having Physics PLCs in the Maltese educational system as a possibility to offer ongoing professional development as well as mutual support from colleagues within the same school.

Leadership and Educational Change

School Leadership has shifted from the single principal it used to be over recent decades. Block (1987:98) elaborates on leadership as the process of translating intentions into reality. This change is often determined by the school principal although not exclusively, since:

successful change of individuals' knowledge and practices in classrooms and schools appears to be accompanied by on-going support and assistance to them as they are implementing the changes... Principals are not the only persons providing facilitative leadership, however, for such leadership is not defined by positions on organizational charts. Rather, it is defined functionally (Hord, 1992).

So within the school environment, who are the leaders who stimulate improvement? Concurring with Block, Murphy, (1991c: 32) suggests that ‘there is no single key actor.’ In fact,

Any person who can deliver the leadership function is a leader. Such persons can include principals, superintendents, and school board members. However, teachers, parents, and community members can be significant educational leaders (Hord, 1992).

Other research like Hansen & Smith (1989) suggests that the principal is a central element in improving instructional programs within the school. Andrews in an interview with Brandt (1987:9) informs that ‘gains and losses in students' test scores are directly related to teachers' perceptions of their principal's leadership. On the other hand, Murphy (1988: 655) reminds on ‘the invisible leadership of lower-level staff members.’ Hord (1997) citing Sergiovanni (1994: 214), explains that
Therefore in secondary schools teachers’ behavior is influenced by the principal and teachers act as leaders in class to compliment the authority of the principal aware of the school’s vision and ethos. This style of leadership may also include the formation of ‘a subject-specific PLC’ – here a Physics PLC – that empowers teachers as leaders in their teaching and enables them to take initiatives collaboratively as well as to offer mutual support. This study proposes introducing PLCs in Physics and related subjects in Maltese schools especially in preparation for ongoing changes in education which not all teachers might readily adopt on their own.

**PLCs and Leadership**

In the study by Toole & Louis (2002) it is seen that there is no universally agreed definition of what a PLC involves but there seems to be a broad international consensus that a PLC ‘exists when you see a group of teachers sharing and critically interrogating their practice in an on-going, reflective, collaborative, inclusive, learning-oriented, growth-promoting way’ (ibid.,) and ‘operating as a collective enterprise’ (King & Newmann, 2000). This agrees with earlier work by Astuto and colleagues (1993) in which teachers in a school together with SMT continuously seek and share learning openly, and then act on their learning. The ultimate aim of their actions is to enhance their effectiveness as professionals for the students’ benefit. Du Four (2004) argues that true PLCs follow principles that centre on student learning, a culture of collaboration, and results. Vescio et al. (2008:89) concur adding that

PLCs honour both the knowledge and experience of teachers and knowledge and theory generated by other researchers. Through collaborative inquiry, teachers explore new ideas, current practice, and evidence of student learning using processes
that respect them as the experts on what is needed to improve their own practice and increase student learning.

It is striking to note the emphasis on teachers being the experts working on local knowledge (Geertz, 1983) in their school and also makes them take decisions as required. Sfard (1998:6, 7) adds that teachers as ‘learners in the community are preservers of its continuity’ and become a team. However these ideas can be challenging to the leadership team in a school as sharing power is sometimes resisted if not also considered as a threat. Very often changes are attributed to the principal’s role since:

…any change in a school must be accepted, appreciated, and nurtured by the principal. In the case of PLCs, accepting, appreciating, and nurturing change may be a difficult challenge for some principals as one of the defining characteristics of a PLC is that power, authority, and decision making are shared and encouraged (Hord, 1997).

The proposed PLC theory is an important aspect in this study as secondary school teachers collaboratively become empowered to lead through their teaching responsible for coverage of syllabi, updates to recent changes and use of new technologies. They also impart the best learning experience for their students since their teaching is student-centred. The PLC framework makes them leaders able to decide, take actions and initiatives in their teaching and at the same time be able to learn collaboratively from colleagues by critical reflection on their everyday classroom experience. Barnes and Kriger (1986:15) suggest that past theories of leadership were insufficient as they ‘deal more with the single leader and multi-follower concept than with organizational leadership in a pluralistic sense’. They contend that leadership is not found in one individual's traits or skills but is typical of the entire organization, wherein ‘leader roles overlapped, complemented each other, and shifted from time to time and from person to person. . . .[implying a] more inclusive concept of leadership’ (ibid.,:16).
So what leadership style enhances the PLC framework? According to Hord (1998:4) supportive and shared leadership develops when the principal accepts a collegial relationship with teachers, shares power and decision making, and promotes and nurtures leadership development among the staff. Slater and Doig (1988:296) refute the assumption that leadership is a possession of just one individual and state that this supposition ignores the ‘possibility that leadership may also be exercised by a team of individuals.’

In my work as Head of Department (HoD) in Catholic Schools for Physics, it became interesting to learn from different school Principals about leadership issues that nurture the culture for teachers to communicate their understandings of new strategies and innovations in Physics teaching with other teachers in their school. In these schools changes in pedagogy and assessment were readily adopted and the necessary work was shared between teachers involved. The collaborative work and initiatives in these schools makes them stand out by comparison to others. DuFour & Eaker (1998:106) attribute this culture to good communication skills, since in their absence ‘there is little likelihood that changes will be implemented or sustained by individuals and a great likelihood that initiatives intended to promote widespread school or district wide reform will fail’ (ibid.,).

This study analyzed research on PLCs that for secondary schools focuses on subject departments due to ‘specific disciplinary knowledge taking priority over shared knowledge about pedagogy and adolescent development needs.’ (Louis and Marks, 1998) So ‘a subject-specific PLC’ is considered for Secondary schools’ setting, which here means a Physics PLC.

The study addresses the research questions: (1) What kind of leadership and support are necessary in Maltese schools to introduce and sustain the Physics PLC framework? (2) Are Maltese Physics teachers prepared to adopt the PLC framework in their school as a response to ongoing curricular
Sampling and Population

This research sought to investigate the leadership issues necessary to enable the running of PLCs in Maltese schools. Since this idea is still primitive in Malta but a few schools (both state and catholic) are implementing PLCs, it became necessary to consider both sectors. In the qualitative part of the study, leaders in Physics education were interviewed including Ministry officials as well as principals from Catholic schools. The Education Division interviewees were involved due to their expertise to gain knowledge of how state schools and teachers are led. The chosen Catholic schools principals were those with a Physics PLC in their school - details of PLC formation and sustaining were discussed.

It was ensured that the sample of teachers participating in the questionnaire was a true picture of the Maltese Physics teachers’ population. Data from the Education Division informed about the total population of Physics teachers determining the size of sample to enable generalisation of the questionnaire, else as Robson (2011:239) advises ‘if the sampling is faulty, this produces a generalizability or external validity problem.’ In the questionnaire, teachers’ viewpoints were considered as a complement to interviews to discover if Maltese teachers’ perception of school sharing of their intellectual property is possible.

Research methods

Through the combination of both parts of the study it became evident (i) how teachers are led in
schools with successful PLCs (i.e. the related leadership issues for SMT were discussed) and also
(ii) Physics teachers’ willingness to join a PLC across different Maltese schools was discovered. The concurrent mixed methodology consisted of:

(1) an interview with the Director General of Education and ex-Physics Education Officer (EO) who restructured Physics teaching. This part aimed to ‘provide a wealth of practical advice and suggestions.’ (Lofland et al, 2006: 107) on what makes teachers resist change, what makes them work better with colleagues in schools and the kind of support and leadership needed in a school to have teachers working together.

(2) Three face-to face interviews with Catholic school principals wherein a Physics PLC exists to inform on the process to set up and sustain a PLC over time.

(3) An open interview with the Physics EO outlining the situation in state schools and the leadership style adopted in Physics presently.

(4) The teachers’ questionnaire which avoided double questions (Bell, 2010:145) and used Likert scales. Thus respondents identified ‘strength of feeling or attitude towards a given statement ... but care [had] to be taken not to read too much in these ranked scales’ (ibid:146) - so in the questionnaire wording was downsized, common language was used, unambiguous questions or those containing double negatives were avoided and that the wording did not lead to specific answers (ibid: 119). The piloting phase of the questionnaire in three catholic schools ensured this was true with amendments done as necessary. For this part of the study, descriptive statistics served for ‘data representative of a population’ (Bartlett et al., 2001:43) to ‘interpret data scientifically’ (Cohen et al., 1994:36). The use of a digital program helped in the questionnaire analysis to better reveal the trends in the sample.
Analysis

For the Catholic school principals’ interviews held, initiating a Physics PLC in the school was seen to have a common element – that of involving the input of the Head initially to share the vision of the school with teachers. This presence during PLC meetings was fundamental in the early stage to initiate plans. Also when the number of teachers increased substantially due to the school adding an additional class in Year 9 (when students start to study Physics) or because of recent legislation having Science practicals with up to sixteen students, the PLC formation ensured standardisation of work across different classes so that the learning is similar for all students in the same year group.

In Star Boys Secondary College (pseudonym), for instance, the PLC was initially based on having the same notes ‘since students compare…across the same cohort.’ The PLC enabled discussing, collating work, comparing different resources, laboratory skills and techniques. The presence of the Assistant Head for a PLC meeting as an observer was important but ‘teachers were left to take the final decision according to what they thought best.’ This is similar to what Davies and Davies (2009:15) term as direction-setting through strategic leadership as in figure 1.
At St Mary’s College (pseudonym), the Head led to the formation of a PLC by collecting a common scheme of work from teachers hence satisfying ‘the need to act in the interest of the students… for the sake of continuation and continuity when students change from one teacher to another across the three years when they learn Physics… Also it is very important for all the syllabus to be covered and that all the syllabus for each year in the scheme of work is done. …it is only fair...and part of the teachers’ responsibility!’ In this school, the principal sees that teachers have ‘a pre-planned slot in their timetable to be able to meet up.’ Participation in the Physics PLC enables the adoption of the same teaching style by teachers for what the principal regarded as ‘a smooth transition (horizontal hand gesture) as much as possible... with no gaps whatsoever in the students’ learning.’ This principal puts demands on teachers knowing that her leadership determines school effectiveness for students. Research by Hallinger and Heck between 1980 and 1998 claim that ‘principal leadership makes a difference in school effectiveness’ (Hallinger et al., 1996:178). Furthermore, the way the principal shaped the teaching of Physics in the school allowed for teachers’ demands to be met yet expecting them to act responsibly. This situation relates to what Heck terms as ‘leaders who are able to work with and through the staff to shape a school culture that is focussed yet adaptable’ (ibid: 185). She stressed the fact that the school fosters an open attitude so that ‘teachers’ issues or difficulties if any kind can be voiced and solved with SMT by mutual
The involvement of two lab technicians in the PLC was mentioned since a good number of lessons are held in the lab and for awareness of topics being covered. Any preparation of experiments and demonstrations is done in ample time to ensure that ‘things are decided before-hand so that there are no surprises for students of any kind!’ The visit by the subject HoD in the school is regarded as important to ensure standards are kept and subject issues resolved with the subject expert.

At St Mark’s Boys College (pseudonymn), the Head initially supported the PLC by attending meetings since he also taught a Year 11 Physics class. A framework for Physics teaching was set up including a list of experiments, shared notes, activities outside school and also a number of other tasks. The principal gives importance to class contact and updating in teaching for what he termed as ‘still in touch with the young generation mentality,’ that helps him when discussing issues with parents and teachers alike. Donaldson (2007:2) commenting on principals states that normally,

‘Their position and authority give them a platform for promoting vision and mission and focusing on improvement. But their power over reappointments, assignments, resources, and policies can undercut their working relationships; and their management responsibilities, can distance them from teaching and learning.’

As from the year 2012-13, this principal only attended Physics PLC meetings when important issues were discussed, but insisted on getting minutes soon after emphasising that ‘keeping minutes ensures everyone has a copy of what is agreed in the meeting to be able to refer back.’

Common between the three interviewees was (1) the emphasis on collegiality in the PLC (with St Mary’s principal using both hands to form a circle for this). The above concurs with ‘studies
reported by Hord (1997) revealing that principals in professional learning communities accept a collegial relationship with teachers, share power and decision making, and promote and nurture leadership development among the staff.' (Leo T., 2000: 2); (2) the vision of the school: All principals agreed that this has to be clearly explained and revisited regularly by their staff during the academic year. Use of emails has helped but equally important are Staff meetings and Staff Development Days for reminding on certain policies, ideas, etc...  (3) In the three schools, use of a digital programme to issue the timetable enabled teachers to have a common free lesson. PLC meetings were possible and were done regularly only when this slot formed part of the teaching load. At St Mark’s College for instance it was pointed out that otherwise teachers would resort to meeting casually sometimes using break time and eventually this meeting ‘would fade away’.

The two interviews with Physics leaders in State schools (Director in charge of Science Education, Physics EO) revealed that presently the challenges in Physics teaching relate both to pedagogy and resources. However, Official 1 (pseudonym) said that pedagogy problems outweigh those related to resources since ‘teachers are more geared on teaching than on learning...even NQTs (Newly Qualified Teachers) who at times lack resources in their classroom which are just a stone’s throw away.’ Recalling his own experience working with colleagues, he stated that ‘working individually is less productive and often of a lower quality by comparison... If teachers work together and share resources, practices and ideas… their work would be of a superior quality and would require less effort to carry out.’ However, he added that Maltese Physics teachers (though supported in different ways by the Education Division) find it difficult to share their ideas and work with colleagues. Both officials were aware of a few teachers working together both in State and Catholic schools. Official 2 (pseudonym) related this to be linked to teachers who furthered their studies in pedagogy or who were willing to create projects within school linking to other initiatives like the Eco-school and Comenius programmes.
Both officials agreed on the importance of the role played by SMT in the school. Official 1 elaborated stating that ‘SMT in a school certainly helps such practices by providing the necessary support. The issue with such practices, as always, is time management.’ Surprisingly Official 2, noticed that recently Maltese Physics teachers did show the inclination to prefer to work in a team rather than in isolation. Through experience, he noticed that teachers expected some ‘hand-holding’ when introducing changes since in their Physics classroom they are ‘lonely’. They both agreed that when teachers work together their work is outstanding providing students with better worksheets, tasks, experiments, etc...

Official 1 added that in State schools Physics teachers need support from outside their school, namely from the EO, the HoDs and also the directorates.

Official 2 stated that SMT was important in school for any change and that actually when there were changes in Physics curriculum, this essentially involved the Physics teachers and their HoDs. He emphasised that for a PLC to move on, there needed to be a ‘champion’ teacher in the school taking the necessary initiatives and acting as link person between the school and outside or between teachers and SMT. This is reminiscent to Macbeath and Mortimer (2001:10) reference to a subject leader or head. Official 2 then criticised the Maltese educational system which does not give due merit to Learning Support Assistants (LSAs) present in the classroom who could also have difficulty in passing on Physics material to their students. This parallels Senge et al., (2000:10) commenting ‘Yet schools also face intense pressure to slow down change, to be conservative, to reinforce traditional practices, and not to leave anyone behind.’

In the quantitative part of the study, I discovered that (i) in Malta teachers’ willingness to share was exclusively limited to their own school; (ii) teachers are not willing to use PLC networks or upload their work or their students’ exemplars online. Knowing this, I will adopt a different approach in my work when planning for professional development (PD) programmes which I run regularly.
Rather than disseminating individual teachers’ work typical of a particular school, the training could involve workshops to get teachers working together. After collating material from the different groups the material generated could be disseminated to participants. Besides, this collaborative learning experience would also instill good practice.

The questionnaire data informed that in their own school, teachers were willing to share their own ideas, share tasks at hand and adapt notes, discuss to come up with a common task sheet and share their own notes and resources. So the quantitative data confirmed that the idea of adopting Physics PLCs in Maltese schools is valid. However, to be realistic, Nisbet & Watt (1980:13) advise that one must consider ‘discovering whether people do what they say they do’ implying the need for additional studies to include observation of PLC meetings over, say, two terms and consider what happens therein in more detail.

Contrastingly, teachers were unwilling to share their work online or their students’ exemplars with other schools (even if technology governs our everyday work habits). Presently, 90% of teachers would be willing to meet in their Physics department and in fact, 66.7% already do so.

Conclusions

The idea of Physics PLCs in secondary schools is still embryonic in most Maltese schools. This is because of a number of factors that could relate to what Huberman (1983) describes as teachers’ ‘classroom press’ that isolates them, exhausts their energy and limits their opportunities for sustained reflection. Fullan (1993) stresses the reculturing that is needed rather than restructuring, which is crucial. In this light, the study revealed that for Maltese Physics teachers to be recultured the necessary support from SMT is essential. In particular, this relates to (i) the common slot in
teachers’ timetables to avoid teachers meeting during break time and so ensuring this happens on a regular basis; (ii) an open attitude from SMT offering the possibility to discuss issues that arise from time to time freely and as often as necessary. This reassures teachers and encourages progress of the PLC.

The study proposed making ‘...professional learning an everyday experience’ (Fullan, 2007:36) and it became evident that this is currently possible in Physics (and possibly Science and Mathematics) teaching in Malta. Teachers’ contribution for PLCs to materialise is important but the leadership strategies and support of school principals is fundamental to make it happen. This study also established the need of the physical presence in schools of Physics leaders especially the EO and Physics HoDs not only to standardise but also to learn on how Physics teachers work in their particular school setting and offer any necessary encouragement and backing from time to time. The latter would be even more needed should PLCs come into effect to scale up such a reform as suggested by Elmore (1996) stating: ‘the need for greater attention to the depth of implementation and a shift in reform ownership.’ From current PLC practice in a few schools, it was seen that this is possible when leaders within school and outside offer the necessary support.

These have provided the basis for the following key action points, namely to (i) encourage school leaders in Maltese secondary schools to adopt the PLC framework in Physics teaching; (ii) SMT making arrangements (if necessary manually) in timetables’ scheduling for teachers to be able to meet; (iii) SMT attending PLC meetings to follow what is discussed and shared between teachers. Issues are made known by the leadership team and support offered; (iv) encouraging keeping of minutes for PLC meetings held that could be referred to by all teachers and SMT; (v) look at the PLC framework as an important structure within the school empowering all teachers to act as
change agents in their subject, support NQTs in the beginning of their career but more importantly leading to better students’ achievements.

Indeed educational leadership should look at teachers’ collaborative enquiry as a ‘way of being’ (Street et al., 2005:9) that has the potential to ‘transform the way practitioners think about and relate to the core business of teaching and learning, and in that sense is able to support the transformation of schools’ (ibid.).

References


Hord, S., M., (1997) What is a PLC? In: *Developing a Staff of Learners*, SEDL Letter Volume XIX, Number 1, April 2007,


MacBeath and P. Mortimore (Eds.) Improving School Effectiveness (pp. 1-21), London, Open University Press


