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MALTA REVIEW OF EDUCATIONAL RESEARCH

Volume 12, No.1, pp. 31-61
Faculty of Education©, UM, 2018

The Mathematics Teacher who became a Promoter of Inquiry-Based Learning: A Story of Teacher Change

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Abstract: This paper presents the story of John, a mathematics teacher, who embraced 'change' at a rather advanced stage of his teaching career. As part of this development, he managed to transform his largely traditional practices to practices that advance inquiry-based learning, a pedagogical approach that is aligned to the reform visions for mathematics teaching and learning. Moreover, John is now also committed to promote this 'new' approach among other mathematics teachers. Drawing on narrative research, his case was studied to shed insights on what facilitates or hinders teacher learning and change. The narrative was co-constructed between John and the author in the form of a 'conversation' that originated from a number of Messenger chats on Facebook. The thematic analysis of the data revealed four distinct phases, so far, in John's journey towards becoming a teacher. The journey through these phases is of particular interest to anyone concerned about the impact that different teacher education initiatives have on teacher learning and change. Overall, John's story suggests that teacher change, while possibly not linear and enduring, can happen and appears to be facilitated by certain factors. These include willingness and capacity on teacher's part to change, the availability of opportunity to change, the development of a professional learning community, and the presence of someone at school who is capable and willing to lead and support teacher learning among colleagues.

Keywords: teacher change; teacher learning; teacher education; narrative research

Introduction

The focus of this paper is teacher change. More precisely, it is about change that affects what Clarke and Hollingsworth (2002) refer to as the 'personal

domain' of teachers, leading in the process to fundamental shifts in their beliefs and practices. While acknowledging that teachers learn a lot by teaching (Richardson & Placier, 2001; cited in Steinberg, Empson, & Carpenter, 2004) and as such do not necessarily require specific programmes or structures to learn (see Postholm, 2012; Attard Tonna & Shanks, 2017), change as understood here is much deeper than the 'growth' that is normally associated with established teachers (Clarke & Hollingsworth, 2002). Consequently, given that this paper is concerned with this form of transformational change in teachers, the word 'change' is used throughout to signal what Golding (2017) terms 'deep change', not the growth that derives, almost naturally, from teachers' extended experiences in schools.

In particular, this paper explores the story of a mathematics teacher – whom I am calling John – from his undistinguished beginnings, some twenty-five years ago, as a temporary contract teacher in a secondary school without any kind of teacher education to become one of the more prominent promoters of inquiry-based learning (IBL) in Malta. The change, which occurred during the latter stretch of this journey, saw John renouncing his long-standing "narrow views of mathematics and mathematics pedagogy that include conceptions of mathematics as a closed set of procedures, teaching as telling, and learning as the accumulation of information" (Lloyd & Frykholm, 2000, p. 576). He began embracing instead constructivist learning theories that encourage learners to be active constructors of their own understandings by engaging in activities that include exploring, justifying, proving, critiquing, and generalizing the ideas, representations, and procedures of their solution strategies (see Simon & Schifter, 1991). Such activities reveal an understanding of teaching as a dynamic process of inquiry into student reasoning, which is in direct contrast to the traditional notion of equating teaching to a process of transmitting a set of procedures (Zech, Gause-Vega, Bray, Secules, & Goldman, 2000). The learning benefits linked to the adoption of IBL in class appear to be significant. Hattie (2009) concludes from his analysis of the literature that these include "transferable critical thinking skills as well as significant domain benefits, improved achievement, and improved attitude towards the subject" (p. 210).

In this paper, I am primarily interested in gaining insights into what led John to change his beliefs and practices at a rather mature phase of his teaching career, why this change did not materialise before, and the prospects that his propensity for change has become sustainable and self-generative. His

trajectory towards change – which continues to run across a variety of teacher education experiences and transforming educational scenarios – can contribute to a better understanding of how teachers learn. The dynamics that drive this form of professional learning comprise changes in both the cognition and the instructional practices of teachers (see Levin & Nevo, 2009). Teacher change thus involves changing the person, and this implies in turn changing the life of that person (Hargreaves, 1997). The fact that attempts to impose change on teachers have been notoriously unsuccessful (Sikes, 2002) makes it even more crucial that one tries to understand what drives change in teachers. This understanding could then be the basis on which the development of 'great professional development' actually leads to 'great pedagogy' (see Stoll, Harris, & Handscomb, 2012).

John's story can be very helpful in this respect. Without claiming representativeness or replicability, I am convinced that his story – which represents a single case study of teacher change – has the potential to offer a rich and holistic account that can provide important insights about the phenomenon (see Merriam, 1998). As such, it is worth divulging, analysing and reflecting upon. His story is narrated here, with accompanying reflections and commentary, along a number of sections. First, the reader is provided with information on John's professional development and his teaching and other professional experiences over the years. The literature is then revisited to shed light on the complexities that characterise teacher change. The next section provides the background to the methodology and methods used in this research. The research findings come next, providing details about the four distinct phases that were identified in John's professional career, so far. The insights and implications of these findings for teacher education and teacher learning are discussed in the subsequent section. The final section makes the case for reflection on John's story and how this can inspire change in people.

John's Professional Development and Career Pathways

John, who is in his early 40s, has been teaching mathematics at secondary level (ages 11 to 16) for almost twenty years. His decision to become a teacher can be described as 'vocational' (see Osborn & Broadfoot, 1993) since he had always desired to follow a teaching career. At age 18, he failed to obtain one of the entry qualifications to join the four-year Bachelor of Education (Honours) degree programme at the University of Malta which was, at that

time, one of the routes to become a warranted teacher in Malta. So John applied and was accepted to become a secondary school mathematics teacher on a temporary contract. Although it was particularly challenging for him to teach without any initial teacher education (ITE) in what was considered to be a 'difficult school', his resolve to become a teacher actually strengthened during this first year. Consequently, having attained his missing qualification, he enrolled the following year in the B.Ed. (Hons.) course with, as was customary in those days, two specialisations. His specialisations were primary education, in which students are prepared to become primary school teachers, and mathematics education, in which students are prepared to teach mathematics in secondary schools. Midway through the course, when asked to decide between the primary track and the secondary track, John chose to focus on becoming a secondary school mathematics teacher. This secondary track specialisation seeks to develop 'professional knowledge', 'professional judgement' and 'subject knowledge' (see Leask, 2009) in students by presenting them with undergraduate mathematics content courses, courses in educational theory and foundation disciplines, and general pedagogy and subject methodology courses. Moreover, in line with the curriculum of the B.Ed. (Hons.) programme, students following this track have a number of field experiences, the most notable being the two six-week block teaching practices in schools, one during the third year and the other during the fourth year of studies.

As a graduate teacher, John once again spent his first year of teaching in a state secondary school perceived by many as being 'difficult'. This school catered for students following vocational education. The following year, he was posted to another state secondary school, in which he has remained ever since. At the time of his arrival, this school aimed primarily to educate students who are more academically inclined and consequently more likely to continue with post-compulsory studies along the academic route. Over the years, however, as a result of policy developments in the local education system, the school had to discard its selective student intake policy to embrace comprehensive education policies that are based on the premise that, for both social and pedagogical reasons, it is wrong to select and segregate students (see Edwards, Whitty, & Power, 2002). Throughout his long teaching career at this school, John has predominantly taught students in their first year of secondary education. So far, only occasionally has he taught second and third year classes, and never classes in the final two years of secondary schooling. He pointed out, however, that it is the school administration, at

times in consultation with the heads of department, which decides the class allocations. In recent years, moreover, John has been on a reduced teaching load in view of his other responsibilities and duties at school.

John regularly attends the continuing professional development (CPD) sessions mandated by the sectorial agreement between the Government and the Malta Union of Teachers (see Ministry of Education, Youth and Employment, 2007). This agreement stipulates that teachers in Malta have to attend a three-day session each year, for a total of twelve hours of CPD. Secondary school teachers are normally grouped for these sessions by their subject area. These CPD out-of-school sessions usually adopt a traditional training-focussed perspective that, contrary to what happens when the perspective is learner-focused, does not present professional learning within the specific social contexts of teachers' practice (Attard Tonna & Shanks, 2017). The sectorial agreement specifies further that once every term teachers are to attend professional development sessions, each lasting two hours, organised by their school. These additional six hours of CPD, which are held after school hours, offer greater opportunities for situated professional learning as the senior management team (SMT) can link sessions to the implementation of the school's action plan and teachers can propose themes that arise from their professional needs and concerns. Apart from these mandatory professional development sessions, John also participates in other occasional CPD activities organised by the mathematics education officers (EOs) within the Directorate for Learning and Assessment Programmes. In recent years, moreover, he has begun to lead CPD sessions for mathematics teachers, both within and outside his school, that promote IBL pedagogy in mathematics classes.

The Complexity of Teacher Change

Internationally, the traditional approach to teacher learning as part of becoming a teacher tends to follow this route: First, prospective teachers are expected to enrol in an initial teacher education programme and then, once they join the profession, it is often mandatory that they attend, from time to time, some form of formal activities or events that take place either inside or outside schools (Attard Tonna & Shanks, 2017). The hierarchical nature of this approach positions teacher learning at the receiving end of expert power that exists and operates outside teachers (Barab, MaKinster, Moore, & Cunningham, 2001). Moreover, not only is the journey towards becoming a

teacher depicted as a simple and linear operation, but teacher learning is presented as a largely decontextualised activity (Attard Tonna & Shanks, 2017) in which individuals, even after they gain teaching experience, are viewed almost as if they are objects waiting to be 'in-serviced' (Wideen, 2002). The dynamics of this approach effectively ignore current conceptions of teaching and learning, such as constructivism, and do not reflect the situatedness of knowledge (Korthagen, Loughran, & Russell, 2006). As a result, the professional development of preservice and inservice teachers contrasts sharply with the very same approaches to teaching and learning that their professional education is trying to inculcate in them (Korthagen et al., 2006).

As a way out of this conundrum, Korthagen (2017) suggests that the professional development of teachers needs to be modelled on the robust body of available knowledge about how teaching can have a more positive impact on student learning. To achieve this, for a start, the journey towards becoming a teacher should be recognised for what it is. It is both complex and idiosyncratic (Flores, 2011), and this needs to be reflected in the preparation of preservice and inservice teachers. In order to break the dominant circle of traditionally trained teachers who teach in a traditional manner (Stofflett & Stoddart, 1994), one therefore has to develop professional development programmes and structures that make it possible for prospective and inservice teachers to alter pre-existing personal beliefs and images of what constitutes teaching and being a teacher (see Flores, 2011). The ultimate aim should be to change what happens inside classrooms because, as Wiliam (2010) points out, it is not enough to change what teachers know and believe unless they also change their practices. In all this, however, attention should be given to teachers' great 'sense of practicality' that determines actions according to their perceptions of what works and does not work within a specific context (Hargreaves, 1994a). So ingrained is this sense that teachers invariably resist change initiatives, even when legally imposed, which direct them towards practices of which they are not convinced (see Sikes, 2002; Hattie, 2009).

The way forward thus appears to rely on a process of dialogue, negotiation and accommodation, not imposition (Durrant & Holden, 2006). Indeed, the traditional notion, now discredited, of viewing teacher education as a process of transferring knowledge

to teachers (see Korthagen et al., 2006) has been overtaken by calls for teachers to become "active agents of their own professional growth" (Schleicher, 2012, p. 73). This shifting of responsibility on teachers necessitates that preservice and inservice teachers are exposed to ongoing opportunities to engage in professional learning that builds on the understanding of learning to teach as a life-long endeavour situated in practice (see Meissel, Parr, & Timperley, 2016). The understanding here is that 'teachers become learners' (Easton, 2008; Hattie, 2009) who operate along a 'learning-to-teach continuum' (see Feiman-Nemser, 2001; Anderson, 2004). This repositioning would facilitate, in turn, the reconciliation of the divide between theory and practice in the professional development of teachers (see, for instance, Anderson & Freebody, 2012; Korthagen, 2017). This would allow teachers to "translate new views and theories about learning into actual teaching practices in the schools" (Lunenberg, Korthagen, & Swennen, 2007, p. 586). Should this happen, teachers would be far less likely to remain sceptical about the day-to-day relevance of their professional education (see Korthagen et al., 2006; Anderson & Freebody, 2012) and to resist change (see Sikes, 2002; Anderson, 2004).

The success of this reform relies, however, on giving proper attention to how teachers learn (Steinberg et al., 2004) and, consequently, what it takes to enable and support teacher change. The topic of teacher learning – which had remained under-researched for quite a long time (Clarke & Hollingsworth, 2002) – is now attracting considerable interest from the research community (see, for instance, Borko, 2004; Easton, 2008; Hattie, 2009; Anderson & Freebody, 2012; Postholm, 2012; Stoll et al., 2012; Attard Tonna & Shanks, 2017; Korthagen, 2017). Different people tend to emphasise different aspects of teacher learning, but there is general agreement on how teachers learn most effectively. For instance, noting that the core purpose of professional learning should be to improve student achievement and outcomes, Stoll et al. (2012) conclude from their review of the literature that

> …effective professional learning is school focused, school based and school led, whilst also drawing in external expertise where appropriate. Great professional development incorporates into this mix professional learning experiences that are sustained and intensive, rather than brief and sporadic, and that are undertaken collaboratively. (p. 8)

Admittedly, their conclusion is based on evidence linked to the continuing professional development of teachers. Still, the knowledge that teacher education is now viewed as a continuum, spanning across ITE and CPD,

demands that teacher learning during ITE should not only lay the foundations for future learning, but that there should also be continuity and alignment between one phase and the other. Teacher development is conceptualised in fact as a 'system' in Australia, Canada, Finland and Singapore, all of which are at the forefront of teacher education (Darling-Hammond, 2017). In each of these countries, "these systems include multiple, coherent and complementary components associated with recruiting, developing, and retaining talented individuals to support the overall goal of ensuring that each school is populated by effective teachers" (p. 294). In line with this notion of 'system', a number of characteristics of successful ITE programmes identified by Darling-Hammond (2006) mirror the spirit of what constitutes effective teacher learning as part of CPD. These include coherent learning experiences, extended and connected field experiences, links between theory and practice, and strong school-university partnerships.

As a result, looking at the wider international picture, one gets the feeling that, as advocated by Korthagen et al. (2006), we might be witnessing the development of an overarching pedagogy of teacher education. This 'new' pedagogy – in direct contrast to the traditional theory-into-practice approach to teacher education (see Korthagen et al., 2006) – places schools and practice firmly at the centre of teacher learning. Moreover, the expectation now is that "through collaborative enquiry teachers become generators of professional knowledge, agents of change and critical friends for each other" (Zellermayer & Tabak, 2006, p. 34). This approach – which recognises and relies on the professional experience, judgement and expertise of practitioners (Sikes, 2002) – requires teachers to resist the 'balkanised' culture of their work, which often sees them retiring into the isolation of their own classroom practices and keeping professional contacts with colleagues to a bare minimum (see Hargreaves, 1994b). By moving away from a life in schools partitioned from other adults, teachers open themselves to a myriad of learning experiences – such as group reflection and discussions, workshops and seminars, mentoring and coaching, and lesson study – that will help them improve their professional knowledge and develop new instructional practices (see Meissel et al., 2016). Although professional learning can also happen in the context of the individual teacher (Borko, 2004), the social dimension of learning, which requires teachers to operate in dynamic interaction with each other, needs to be recognised as an essential feature of teacher education. For it lessens the likelihood that teachers adopt what Bissessar (2014) terms an 'egg crate' model of instruction, which is both self-

contained and self-referencing, and consequently counterproductive to change.

A lot, therefore, seems to depend on the formation and nurturing of some form of professional cooperation among teachers who are not necessarily from the same school. These 'professional learning communities' – which are also referred to by a number of other names (see Willemse, Boei, & Pillen, 2016) – give teachers the opportunity to work informally with colleagues who share the same passions and concerns, who are facing the same type of problems, and who are equally interested to deepen their knowledge and expertise (Kosnik, Menna, Dharamshi, Miyata, Cleevoulou & Beck, 2015; cited in Willemse et al., 2016). The characteristics of such communities include shared values and vision, shared responsibility, reflective professional inquiry, collaboration and the promotion of both group and individual learning (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). In this supportive environment teachers learn by re-examining what they do and how they might do it differently – a process that leads to the evolution or moulding of new practices from existing classroom practices (Harrison, Hofstein, Eylon, & Simon, 2008). Thus, the development of what Hargreaves (2000, p. 165) defines as 'professional cultures of collaboration' has the potential to address the theory-practice divide that has long been a perennial problem of preservice and inservice teacher education (see Korthagen, 2017).

Choosing a Research Methodology and Implementing the Study

The methodology used in this study echoes the strong personal and professional relationship that I had established with John when we were both involved in the EU-funded project entitled *Promoting Inquiry in Mathematics and Science Education across Europe* (PRIMAS) that sought to promote IBL in twelve European countries (see http://www.primas-project.eu/). In PRIMAS, which was implemented over a three-year period (2010-2013), I was part of the University of Malta team leading the project in Malta and John was one of the mathematics teachers who had agreed to explore the implementation of IBL pedagogy in his mathematics classes. His participation involved working collaboratively with a school-based group of mathematics teachers that met regularly throughout the project, under the guidance and support of their head of department (HoD), to discuss, plan and evaluate mathematics lessons that foreground inquiry-based teaching and learning strategies. John's HoD, who I am calling Paul, was one of the project's so

called 'multipliers' who were responsible for leading school-based CPD sessions that promoted IBL to groups of participating teachers. Although Paul attended the regular meetings held between the University team and the multipliers, which served to deepen our understanding of IBL and to discuss how best to proceed with the implementation of PRIMAS in schools, his interest in and knowledge of IBL pedagogy well preceded his participation in the project. By sheer coincidence, however, the onset of PRIMAS fitted with Paul's plans, as a recently appointed HoD posted in a new school, to stir his colleagues away from what he considered as essentially traditional approaches to the teaching and learning of mathematics. Notwithstanding these plans, the teachers' participation in PRIMAS remained strictly voluntary. In fact, some teachers decided not to participate in spite of being offered a reduction of two lessons per week, for the duration of the project, to compensate for the extra PRIMAS school meetings and corresponding work.

When asked by the PRIMAS international partners to produce case studies that focus on teachers participating in the project, I opted for John after I had attended a couple of project CPD sessions led by Paul. I was struck by John's apparent willingness to change in spite of patently fearing the potential consequences of the change he sought. This ambivalence intrigued me. Thus, in agreement with John and Paul, and after making all the necessary access agreements with the school's SMT, I observed John teach on a couple of occasions and conducted short interviews with him both prior and after the observations. The resulting case study depicted a teacher who was starting to enjoy a new way of teaching, someone who was on the verge of embracing a new teacher identify in spite of his lingering concerns related to the contextual practicalities of introducing IBL in mathematics classes (see Buhagiar, 2013). My contact with John, both personal and professional, continued to flourish after PRIMAS.

Indeed, after PRIMAS, I had numerous occasions to witness how John was growing in his knowledge of IBL and in his commitment to promote this pedagogical approach. I noted this whenever I was invited to observe him teach and each time I heard him speak about his teaching with both practising and prospective mathematics teachers. But it was during a particular CPD session that John was conducting for a small group of inservice mathematics teachers that I fully realised the extent of his professional transformation. Constantly referring to his own classroom practices, he spoke competently, confidently and enthusiastically about IBL. Moreover, he kept reassuring the

teachers present about the same concerns that I had first seen him, years back, express during the PRIMAS CPD sessions led by Paul, his HoD. Once again, John intrigued me. This time, however, I was eager to gain insights into how a teacher can pass from one understanding of teaching to another at a rather mature phase in one's career and in the process become a promoter of this new understanding. All I had to do was ask John. He immediately accepted to share his 'story' with me in the knowledge that, although I intended to publish the research findings, his identity would be protected and that no harm would come his way (see Burgess, 1989). Our comfortable and non-judgemental research relationship, as had happened before during PRIMAS, was built on mutual respect, trust and care. In line with our agreement to engage in genuine collaboration leading to the co-construction of 'his story' (see Squire, Andrews, & Tamboukou, 2013), this paper is being published after John read it and gave his consent.

My desire to explore in depth the particularity and uniqueness of John's story channelled me towards the adoption of a single case study that uses qualitative methods within an interpretive paradigm (see Simons, 2009). Moreover, the inherent potential of the case study approach for story-telling (Simons, 2009) suggested a methodology that draws on narrative research that, as Gudmundsdottir (2001) points out, involves the analysis of collected narratives, or stories, to study how individuals experience their world. Given that people do not experience 'things' in isolation, it is important that these narratives capture both the individual and the context (Moen, 2006). Aiming for this kind of overarching data, I decided to co-construct a narrative with John through online conversations using Messenger, the instant messaging service of Facebook. I saw in Facebook, which is fast becoming one of the preferred tools for professional collaboration among teachers (Bissessar, 2014), the possibility to engage in the dialogical construction of a story (see Bakhtin, 1981; cited in Squire et al., 2013) with someone I know well. Apart from the convenience of chatting at mutually convenient times from the comfort of our homes, it was always someone I can relate to and understand at the other end of my computer. John and I, however, met once at his school before we began to interact on Messenger in order to discuss the content of our 'conversations' and the logistics involved. In total, we amassed eight hours of chatting spread across six sessions over a five-week period. This online activity produced a nine thousand word narrative crafted from a carefully edited version, negotiated with John, based on the original messages shared on Messenger. A thematic analysis of this data (see Boyatzis, 1998)

identified four key phases, so far, in John's professional journey that has seen him evolve from a largely traditional teacher to become a promoter of IBL pedagogy.

The Four Phases of John's Story

Research on the work and lives of teachers suggests that they pass through different phases throughout their careers (Leitch, 2010). In this study, for instance, I noted how John's approach to professional learning changed from his initial identification with what Hargreaves (2000) terms as 'the pre-professional age' to an eventual understanding that is based on what Hargreaves (2000) terms as 'the age of the collegial professional'. Basically, John moved from a model that is characterised by practical apprenticeship and improvement through individual trial-and-error, to a model that sees teachers increasingly turning to each other for professional learning, a sense of direction and mutual support (see Hargreaves, 2000). This significant development occurred over four distinct phases, to which I now turn my attention.

Phase One: Tranquillity and Passivity

This phase in John's teaching career spanned roughly across fifteen years: from the year he spent as a teacher on a temporary contract before enrolling in the B.Ed. (Hons.) course right until he came in contact, through a colleague at school, with what was then for him a 'new' approach to the teaching and learning of mathematics. Asked to describe his pedagogical approach before and after he attended the ITE programme, John practically depicted an unchanged pedagogical scenario (see Table 1). It was as if his ITE experience had had no real impact on his teaching practices. This 'teaching as transmission' approach (see Zech et al., 2000), which continued to dominate his teaching right through this phase, was embedded within what Romberg and Kaput (1999) identify as the traditional three-segment lesson that exposes students to a cycle of exposition, practice and consolidation. Consequently, John's teaching style at this stage did not conform to constructivist learning theories which build on the notion that "learners actively construct their own understandings rather than passively absorb or copy the understanding of others" (Simon & Schifter, 1991, p. 310).

Before ITE	After ITE
I used to teach in a very traditional manner by writing on the board many examples and the students would copy … then they would do classroom and after that I'd give them homework.	*My teaching was traditional. I used to teach by first presenting students with examples, after that students would work on their own, and then I would give them homework.*

Table 1: John's approach to the teaching of mathematics before and after ITE

Moreover, John's descriptions in Table 1 strongly suggest that his participation in ITE and CPD sessions during this period practically had no, or very little, effect on his pedagogy. Agreeing with this assessment, he even alleged at one point that the B.Ed. (Hons.) course had not exposed him to pedagogies other than what he now considers as traditional pedagogy. This adds weight to Kagan's (1992; cited in Flores, 2011) claim that ITE at times reinforces rather than challenges the prior beliefs of prospective teachers. Using hindsight, he conceded however that his lack of pedagogical change might have also resulted from an inability to enact in practice his intellectual understanding of theory, which according to Darling-Hammond and Snyder (2000) is a major problem in teaching and teacher education. On a more positive note, he stated that his teacher education during this phase of his career, especially throughout preservice training, had familiarised him with a variety of teaching resources and technologies that had rendered his teaching somewhat less traditional.

> *After the B.Ed. course my teaching remained traditional, but maybe less than before. During the B.Ed. course, and also in some CPD courses I attended, I found it helpful to learn about the use of different resources and technologies … while before it was just talk-and-chalk, now I began to use handouts and so on. But this did not change the essence of my teaching. Even during the B.Ed. Teaching Practice, my teaching was traditional. And this situation did not change for many years after I started teaching … the centre of my teaching was the teacher, not the students!!*

Reflecting on this phase of his teaching career, John said that it was only in recent years that he began to comprehend that the introduction of new resources and technologies does not necessarily lead to improved pedagogy (see Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011). The realization that such 'tools' can only be effective as far as they allow teachers and

students to reach the desired instructional outcomes (see Tamim et al., 2011) led him to acknowledge that, in spite of his innate inclination to seek change and improvement, his approach to teaching and professional development had remained unchanged for a very long time. Indeed, during that period he retained his view of teaching as a technically simple activity and considered professional development as something that teachers acquire as they 'experiment' on their own inside their classes (Hargreaves, 2000). At that time, this situation represented 'normality' for him, something that is part and parcel of teachers' professional lives.

> *Quite frankly, I used to find it easy teaching in a traditional manner … it's always the same routine and doesn't require much effort from the teacher. And there was no one at school to lead us, to inspire us at that time … I guess the system was like that then, cause no one ever tried to make me do things differently. Another thing … we all used to work on our own. The maths teachers only met occasionally, say, to be informed about something, to hand in the schemes of work, to decide who will be doing the exam papers and things like that. We never met to plan lessons together, to discuss difficulties … there was no collaboration then!*

Research in Malta (see, for example, Bezzina, 2002; Attard & Armour, 2005; Buhagiar & Murphy, 2008; Brown, Gauci, Pulis, Scerri, & Vella, 2015; Attard Tonna & Shanks, 2017) repeatedly suggests that the professional isolation among teachers portrayed by John is the norm. He referred in fact to the prevalence of this situation in local schools to explain why, at that time, he used to accept it and saw no need to change it. It was only later – during phase two of his story – that he began to realise how teacher isolation, which in reality is an international phenomenon, stifles teachers' professional development and consequently affects negatively the quality of teaching (see Biddle, Good, & Goodson, 1997; Hattie, 2009; Saha & Dworkin, 2009).

Phase Two: Enthusiasm and Turmoil

By and large, phase two spread over a four-year period, in the middle of which John and his colleagues at school were involved in the PRIMAS project. Although John was reportedly comfortable with his professional life throughout most of phase one, he claimed that towards the end of that phase he had become increasingly dissatisfied with his traditional teaching routine. Consequently, believing in his 'talent' to engage in more intricate forms of teaching than the transmission method, he yearned for change. John stressed, however, that the real 'spark' for change was the arrival in school of Paul, the new HoD.

> *First of all, I was bored teaching practically in the same way … I love change. I'm always doing that something extra to avoid the vicious circle of monotony … I also think that I have the talent to teach beyond the comfortable cycle, surely for the teacher, that relies on drilling and memory recall. But then I do not think that a teacher can change on his own … that's certain!! So the arrival of Paul was for me a turning point, a spark … he rekindled in me the flame that was dying out because I had fallen into the trap of traditional teaching!*

John was speaking here about what led to his initial steps towards change. From the extract above, it is clear that at the time of our 'conversations' he could distinguish between 'change' and the 'growth' that teachers normally acquire over the years through their teaching experiences (see Golding, 2017). This understanding began to develop during phase two of his career: Indeed, the introduction of new resources and technologies in class, which was considered as a sign of change during phase one, was re-dimensioned to a sign of growth from phase two onwards.

Change, as understood in this paper, appears to have been motivated by three main factors. First, John's professional boredom towards the end of phase one arose, at least partially, from his self-declared love for change. Although, up to that point, this love reportedly led to growth rather than change, he remained a teacher with a 'willingness to change' that, as Hattie (2009) notes, suggests a disposition to seek better alternatives even at the cost of discontinuing the use of familiar practices. The second factor has to do with the perceived complexity of different teaching approaches. The manner in which teachers teach has not changed much over the past two centuries, and the transmission model continues to dominate (Hattie, 2009). Understandably, the long-standing tradition and technical simplicity of this teaching approach (see Hargreaves, 2000), in addition to the fact that it does lead to some form of learning (e.g., facts and skills in mathematics), make it attractive for teachers to adopt. Indeed, teachers are known to 'wash out' the pedagogies encountered during ITE and adjust to traditional ways of teaching once they join the profession (Korthagen et al., 2006). Although John did not personally experience this adjustment, he was aware from the beginning of phase two that it would be more complex to work within non-traditional models of teaching. He confided that had it not been for his belief in his 'ability to change', it would have been much harder for him to venture beyond his transmission comfort zone. Put differently, demonstrating a good measure of self-efficacy (see Bandura, 1997), he decided at that stage that he

has what it takes to meet the higher pedagogical demands of implementing IBL in class.

While the first two factors – which echo Spillane's (1999) reference to teachers' will and capacity to reconstruct their mathematics practices – are linked to John, the third factor is extraneous to him. Indeed, it is linked to Paul's arrival in school. John repeatedly emphasised throughout our 'conversations' that his change was primarily the result of meeting Paul and working alongside him for a number of years. The advent of the new HoD was conceived by John as his 'opportunity to change'. It was as if the encounter with Paul had created a working space for John in which he – very much in line with Vygotsky's (1978) notion of the zone of proximal development (ZPD) – could now develop, in collaboration with other colleagues at school, under the guidance of a more capable teacher in ways that he could not do before on his own. Participation in this space was voluntary. Paul had created a parallel, two-tiered system in which, while all mathematics teachers attended the 'normal' departmental meetings, only volunteers, like John, attended the extra sessions that were linked specifically to PRIMAS.

ITE	CPD Courses	Paul and Colleagues
• mandatory participation; • 'transfer' of theory; • theory at university and practice in school; • student teachers expected to bridge on their own the gap between theory and practice; • teaching in isolation; • lack of support in school.	• mandatory participation; • held outside school; • one-off and short duration; • delivered by experts; • passive participation; • issues identified by others and not necessarily relevant to own experiences; • lack of support in school.	• voluntary participation; • held inside school; • ongoing and sustained; • collaborative approach; • active participation; • issues identified together; • cycles of planning, implementing, observing and evaluating lessons together; • ongoing support in school.

Table 2: Key characteristics of John's different learning experiences

The information provided in Table 2 is based on John's descriptions of his different professional learning experiences during phase one and phase two.

As evident from this table, his collaboration with Paul and other colleagues at school contrasts sharply with his ITE and CPD experiences, both of which presented him with traditional approaches to teacher education that, as Barab et al. (2001) point out, are based on expert power and are hierarchical in nature. Moreover, the embedded theory-into-practice perspective of these approaches, in which learning is perceived as a decontextualised activity, is now being increasingly challenged in view of the limitations and inadequacies (Korthagen et al., 2006) referred to earlier on in the paper. On the other hand, John's experience in school with Paul and other colleagues mirrors many of the characteristics of effective CPD programmes (see, for instance, Darling-Hammond & Mclaughlin, 1995; Anderson, 2004; Harrison et al., 2008; Stoll et al., 2012). A key feature of their approach was that their quest for change did not focus on practices in a vacuum: They acted instead as a group of individuals working collegially on their practices within the specific context of their school (Postholm, 2012). Within this voluntary group, contrary to when all the mathematics teachers met as a department, Paul did not assume the role of HoD. He acted here as a leader of teacher learning (see Postholm, 2012), while remaining himself a learner among learners. John reacted very positively to this bottom-up approach to teacher learning (see Korthagen 2017), which was a new experience for him, and his enthusiasm for teaching and learning was rekindled.

> *Paul simply inspired me, all of us I guess … to give you an idea of how we worked together I'll tell you about PRIMAS. We were a group of about 5 or 6 teachers who used to meet twice a week to plan a lesson. And Paul was like our manager, someone to lead us but one of us just the same! We had marvellous teamwork, all of us supporting each other … just imagine, a group of teachers would observe a lesson and we would discuss it afterwards. Before, I would have been petrified to let anyone in my class for fear that he'll either criticise me or 'steal' my lesson … Still, in truth, during that period I remained sceptical about the introduction of IBL, as I was afraid that I'd not finish the syllabus ... and what about students' preparation for exams? At the same time we were getting this fantastic response from students … Quite frankly, though, it was my faith in Paul and his constant support that kept me going in spite of my anxieties and fears!*

During phase two, however, John remained tormented by a fundamental professional dilemma (for a detailed account, see Buhagiar, 2013). For while he felt touched, excited, part of a team and a much more competent teacher as a result of that experience, he was not so sure that he should actually practise what he was starting to perceive as 'good teaching', certainly not for most of the time. And this was out of fear that such pedagogy would backfire on students in an educational environment that in reality values other forms of

teaching (see Korthagen, 2004). It took a good measure of resilience on his part – considered by Golding (2017) as one of the necessary conditions for teacher change – and sustained collegial support, especially from Paul, to keep moving towards new ways of viewing teaching and learning while working in a system that insists on content coverage and thrives on examination success (see, for instance, Grima & Chetcuti, 2003; Buhagiar, 2004). This permitted him to move into phase three, which he readily acknowledged as the most gratifying period of his teaching career so far.

Phase Three: Conviction and Action

There was no defining moment when phase two stopped and phase three began. Phase three, however, came to an abrupt stop after practically three years when Paul left school to take up a new position. During this relatively short period John changed from a novice and hesitant practitioner of IBL to become not only a convinced and skilful practitioner, but also a promoter of this approach. Maass, Swan and Aldorf (2017) appear to have sensed his potential when they classified him among the mathematics teachers who had developed a rather complex view of IBL during PRIMAS in spite of having very little prior experience of IBL. His transformation, though, began in the months following PRIMAS. At that point, John faced an important decision: Should he put IBL behind him and continue teaching as before, with possibly some adjustments, or should he continue learning about, and working on, the implementation of IBL? Besides the enthusiasm and the intense professional learning that he had experienced during PRIMAS, his decision to continue was based on the realization that he could work the 'new IBL ideas' into his existing practices in a way that is both effective and acceptable within his school context (see Harrison et al., 2008).

> *My IBL lessons present students with activities that can take more than one lesson … I present students with a situation or problem that they try to solve on their own, in groups … I go round simply to observe their thinking and work, and only offer 'help' through questions. IBL puts students at the centre of learning and my role is to facilitate that learning. But time is the problem with IBL … With experience I've learnt however to strike a balance between using IBL and more traditional teaching that exposes students to exam-like questions and techniques that they will need in examinations. But even here, although I still make use of practice and drilling, my approach has changed because in the non-IBL lessons I insert elements of IBL like open questions, group work, presentations, class discussions and so on.*

Although John's 'solution', which continues to this day, involves a mix of two types of lessons, in reality there is no mental separation between his so-called

IBL lessons and the rest of his lessons (see Maass, Swan, & Aldorf, 2017). As, indeed, each type offers what can be seen as a different interpretation of how IBL can be integrated within mainstream mathematics lessons. John claimed that had he had no concerns about his operating context, mostly in relation to the examination system, he undoubtedly would have chosen to teach mathematics exclusively through what he calls 'full-blown IBL lessons'. Instead, displaying a 'sense of practicality' (see Hargreaves, 1994a), he went for a mixed teaching approach that relies on judicious use of various characteristics of IBL without jeopardising student achievement in examinations. This harmonization of his teaching efforts (see Sedova, 2017), which arguably helped him survive the 'risky business' of introducing new practices in school (Loucks-Horsley, Love, Stiles, Mundry & Hewson, 2003; cited in Harrison et al., 2008), also permitted him to further his professional learning under Paul's guidance. John's other challenge, as he transitioned from phase two to phase three, was how to continue working with Paul, and possibly other colleagues, on IBL. A new way had to be found outside PRIMAS, a project that had offered participants a number of concessions, including a reduction in their teaching load and fixed weekly meeting slots.

> *After PRIMAS, although we still met as a department to discuss stuff like exams and syllabi, we no longer worked on IBL as a team. I think there were different reasons for this … some teachers could have been put off by the amount of work involved, others were perhaps never convinced about IBL, while others left school. But I wanted to continue working on IBL even if it was going to be just Paul and me … one of the PRIMAS teachers did join us however! After PRIMAS I worked even more closely with Paul and, apart from developing many IBL lessons, we created this big bond between us ... we spent so much time together and he was a great mentor! Just to give you an idea of how we worked … Paul would often observe my lessons, and we even filmed lessons, so that we could afterwards discuss what worked and what worked less … Never before had I learned so much about teaching than in these last few years!*

The fact that some teachers decided after PRIMAS to stop collaborating on IBL suggests that, as Cuban (1984; cited by Hattie, 2009) claims, teachers may show signs of pedagogical change for a while when they are involved in some reform initiative of which they are not convinced. But this 'change' remains surface deep and classroom practices go back to normal as soon as the push favouring that particular reform begins to recede. On the other hand, John's disposition to change and the importance that he assigned to furthering his learning under Paul's tutelage resulted in much greater determination and involvement on his part after PRIMAS (Attard Tonna & Shanks, 2017). In itself, this development indicates how crucial it is that teachers become

committed to their professional learning. For it seems that once teachers become convinced of something, they would somehow manage to find the time and the means for it, even in the absence of enticing and accommodating concessions.

Developing a professional relationship with Paul that John likened to mentoring, they now became increasingly closer, even on a personal level. In what could almost be described as a one-to-one approach to teacher learning, John had a supported, sustained, ongoing and intensive professional learning experience that was grounded in reflection and experimentation (see Darling-Hammond & Mclaughlin, 1995). This experience continued to build on the professional learning that had started during PRIMAS, albeit in a much more intensive manner. In particular, John engaged with Paul and another teacher in what Harrison et al. (2008) refer to as an evidence-based approach to collaborative inquiry. Embedded within the developmentally effective action research cycles of lesson planning, observation, assessment and reflection (Stoll et al., 2012), this approach helped them gain insights into their practices and goals, leading in the process to the creation of shared professional knowledge (Harrison et al., 2008). At this point, John started gaining the reputation of IBL 'champion teacher', basically someone who has demonstrated a degree of professional development in spite of working in a context that is not particularly conducive to it (Rebolledo, Smith, & Bullock, 2016). This was also when he began accepting invitations, received mostly through Paul, to share his experiences and expertise with both preservice and inservice teachers. This development effectively led John to become a promoter of IBL among different audiences of prospective and practising mathematics teachers. His engagement in this 'multiplicity of social spaces' offered him in turn further opportunities for professional learning, further opportunities to deepen his change (Hodgen & Johnson, 2004).

> *It started when Paul asked me to help him promote IBL among teachers … he wanted a normal teacher like me to be a testimonial during meetings that IBL really works. One thing then led to another … I've presented in many teacher meetings, including formal CPD sessions, and I've often had student teachers observe me teach IBL lessons. Once I even presented with Paul and another colleague in a national teacher conference … I also began promoting IBL with colleagues in school, most of whom came after PRIMAS and are still young and inexperienced ... Having the chance to convince other teachers to use IBL are unique experiences of which I'm proud. For me, promoting IBL is an opportunity to continue learning, an opportunity to do something good, an opportunity to push an idea in which I believe so much!*

During phase three, John reached a state of professional fulfilment like never before. Most importantly for him, he was teaching in a way that largely mirrored his beliefs, at least as far as the school context would permit. By assisting Paul, moreover, he sensed he was serving his mission to disseminate a pedagogy in which he truly believes. His professional reputation was also growing in the meantime. Indeed, his 'by teacher for teachers' (see Smith, Bullock, Rebolledo, & Robles López, 2016) approach as he participated in numerous teacher learning activities was gaining him recognition and respect, well beyond his school, as a skilled practitioner and a promoter of IBL. On a personal level, he also felt privileged to be working side-by-side with Paul, someone he greatly admires and is devoted to. But this most rewarding professional period for John was dealt an unexpected blow when Paul left school to assume other responsibilities. This departure led to phase four of John's story.

Phase Four: Affliction and Hope

Phase four has been going on for slightly more than a year now. In this relatively short period John has experienced what he considers to be his gloomiest moments as a teacher. Not only is he still 'mourning' the loss of his mentor and friend, but he is greatly concerned that life in the school's mathematics department could now return to the teacher isolation practices that preceded Paul's arrival.

> *I'm still in shock! I felt so down when he left … I was truly devastated! I really miss him as there was this great bond between us! I continue to feel this big void in my life at school because we used to do so many things together. Just imagine what other things we could have done had he not left. Now I'm afraid that we'll fall back to the apathy we had before Paul came … this thing scares me and really saddens me! I don't want to go back to how things were before Paul!*

John had begun to realise in phase two, and even more so during phase three, that when teachers collaborate together within a supportive learning community they have the opportunity to grow professionally (see, for instance, Stoll et al., 2006). For him, becoming a skilled IBL practitioner and a promoter of this pedagogy were a direct consequence of shedding his prior isolationist experiences that reflect the 'Just leave me alone to teach my way' mantra that, according to Hattie (2009), is common among teachers. Having grown increasingly weary during phase one of this traditional way of being a teacher and noting the multiple benefits of professional collaboration, he does not want to revert to a way of operating that has serious consequences for

teacher learning and, as a result, for student learning (see, for instance, Saha & Dworkin, 2009). Consequently, noting what he considers as disquieting changes in himself and in his colleagues, John is trying to keep Paul's spirit alive within the department, but seems to lack the conviction that he will succeed.

> *This year, since Paul left, we have practically stopped doing what we were doing before … I'm afraid we're heading back to everyone on his own! I'm trying to keep things going, but I'm not the HoD nor do I want to be at this stage. Today, for instance, I took it on myself to organise a meeting … mind you, only for teachers who are interested … to discuss how to continue developing IBL at school. But it's hard to get things done with no HoD … we've all taken a big slumber! We all say we miss Paul … but I notice that without him apathy is starting to creep in. I'm even neglecting the maths room … Our departmental meetings nowadays are like noticeboards … serve only to inform who is expected to do what and when!*

The culture of teacher collaboration in the mathematics department had started with Paul's arrival some eight years back. While, admittedly, not all the teachers at any one time were part of this culture and many teachers have left school and others replaced them over the years, there has always been a group of teachers who voluntarily collaborated with colleagues on a number of projects, not just IBL, under Paul's lead. John, however, was the only teacher who had been and remained with Paul on this collaborative experience from the very beginning. Still, given the extensive time and effort dedicated to developing a culture of collaboration within the department, it is rather surprising that signs of diminishing team spirit and dynamics began to appear almost immediately after Paul's departure. John reported, for instance, that although some teachers continued to collaborate on co-teaching, which was one of the projects initiated by Paul, by time this is becoming something that pairs of teachers do on their own steam with hardly any reference to other colleagues. Even John, who is trying to somehow hold back what he perceives as an encroaching individualistic tide within the department, admitted that he is neglecting the mathematics room that he and Paul had built from scratch and which had been the symbol of teacher collaboration in school. This spacious multi-purpose room serves to hold discussion and planning meetings, to conduct 'experimental' lessons that are observed, filmed and analysed, and also to store teaching resources. One might argue that this 'neglect' epitomises the fragility of teacher collaboration when this activity leads to practices that challenge the dominant structures and values of school (see Harrison et al., 2008), especially when there is no one capable and willing to lead teachers along this path. Not seeing himself as

someone who can shoulder this responsibility, John appears to be playing for time by proposing interim measures that would hopefully 'keep things going' until some more viable solutions are found.

> *I desperately need to find an ally at school if I'm to continue growing as a teacher … I'm still in contact with Paul and I'm hoping that he'll keep coming to school … that would give me motivation and drive! Mind you, Paul and I are planning to do something that would involve the maths teachers at school … we're after volunteers, but I cannot give details at this stage! Another possibility for me is that a new HoD comes who has a passion for work and also believes in IBL. If I'll find someone like Paul I'll give my 200% … but I still think that there will never be anyone like Paul!*

John's desire to find an 'ally' who would support his continued professional growth suggests that while he had experienced notable change, his change has still not reached the stage that Franke, Carpenter, Levi and Fennema (2001; cited in Steinberg et al., 2004) consider as 'sustainable and self-generative'. So much so that John – who remains committed to change – is now looking for possible solutions in which he is willing to be a protagonist, but are led by others. He is working in fact, and there appear to be good prospects, to realise a project that would see him and his colleagues collaborating closely once again with Paul. On a longer term basis, he is hoping that the new HoD would be someone capable and willing to carry on where Paul left off. Notwithstanding these plans and hopes, John remains nostalgic about what has been and what could have been had Paul not left. Consequently, convinced as he is that the journey ahead is not smooth and that things might never be the same again, one might argue that John demonstrates at best what Grace (1994) terms 'complex hope'. That is, true to his resilient spirit and authentic commitment to change, he continues to seek learning opportunities with a degree of optimism in spite of recognising the complexity of what lies ahead.

Teacher Education and Teacher Learning: Insights and Implications

All the findings in this paper are based on a single case study. However, John's story has the potential to shed important insights on teacher education and teacher learning. Consequently, assuming Bassey's (2001) notion of 'fuzzy prediction', I offer here a number of insights embedded in qualified and contextualised statements that, once their implications are explored, can serve as guide to professional action.

- John experienced change, as different from growth, at a rather mature stage of his professional life. This suggests that it is never too late for a teacher to revisit and change his or her beliefs and practices. One could therefore argue that teacher education stands to benefit should it move beyond the usual ITE and CPD provisions to create additional spaces, inside and outside schools, which have the potential to ignite and advance professional learning. These spaces would serve as 'zones of enactment' in which teachers' will, capacity and prior experiences interact with reform initiatives and learning opportunities (Spillane, 1999).

- Although all the mathematics teachers in school were offered concessions to participate in PRIMAS, not everyone accepted. Again, while one might safely assume that all the participants grew professionally from that experience, it appears from John's story that only he, and possibly another teacher who continued to work with John and Paul after PRIMAS, actually changed. Apart from the opportunity to change, John attributed his professional development to his willingness and capacity to change. This suggests that while opportunity to change is possibly essential, it may not be sufficient. Consequently, one could argue that change is more likely to happen should teacher education programmes make a greater effort to instil a sense of change in prospective and practising teachers, and also provide them with the necessary pedagogical skills to handle the more complex demands of teaching. If this is to succeed, however, teachers need to operate in a school culture that is conducive to change (Anderson, 2004).

- John's beliefs and practices remained unchanged when his teacher education was based on the traditional theory-into-practice model (see Korthagen et al., 2006). On the other hand, once he experienced, through PRIMAS, a way of professional learning that brought theory and practice closely together, he entered into change mode and went on to become a promoter of change. This suggests that teacher education programmes, at all phases of teachers' professional lives, are more likely to have an impact on teacher learning should they present learning as situated, with theory and practice constantly feeding into and developing each other. This is more likely to happen when the location of theory and the location of practice are conceptualised as complementary to each other (Anderson & Freebody, 2012) or, as happened in John's case, that they actually occur under the same roof.

- John changed within a teacher community where he was encouraged to act as a learner in a welcoming, yet professionally challenging, environment that offered direction and support. In fact, he claimed that he could not have done it on his own. His experience adds testimony to reports claiming that teachers benefit when exposed to professional learning within a community, which might even include members from different schools. One might consequently suggest that, in order to enhance teacher learning, teacher education programmes for preservice and inservice teachers should consider organising their learning around communities, both within and outside schools. This would require the development of professional learning community structures (see Golding, 2017) by the host institutions, be they schools or providers of teacher education, that facilitate professional encounters through the provision of meeting slots in their schedules and adequate resources (Attard Tonna & Shanks, 2017).

- Paul played a crucial role in John's development and change. Indeed, not only did Paul offer John and other colleagues the opportunity to change, but he was also their leader of teacher learning (see Postholm, 2012). In that role, Paul inspired change, offered direction and support, and acted as their critical friend while being one of them. It was a professional relationship built on friendship and trust, not hierarchy. Noting the transformation in John as a result of this relationship, one might argue that teachers are likely to benefit should they be attached to such leaders throughout the various phases of their career. This can be realised as part of mentoring schemes that accompany teachers throughout their professional journeys. In this way, teachers would have the opportunity to engage in a continuous process of collaboration that can lead to a better understanding of teaching and learning (Wang & Odell, 2002).

- John's change trajectory has been neither easy nor linear. Most notably, this journey has included dealing with serious doubts as to whether IBL can be used successfully within a traditional education system and acute feelings of abandonment and loss following Paul's departure from school. But thanks to his resilient nature, John eventually managed to harmonise his practices while remaining sensitive to the 'requirements' of the traditional context, and to find new ways of collaborating with Paul after they had stopped teaching in the same school. John's story thus suggests that teacher change can be a rather complex and unnerving affair. One might therefore suggest that teachers seeking change should be made aware of the possibly bumpy ride ahead to the extent that they, as Sedova (2017) warns, might even experience periods of regression.

Such a forewarning might help teachers to maintain faith in their personal transformation.

- The change in John originated from Paul and remained dependent on Paul's presence in John's school life. Such was this reliance that John – who had embraced change and became a promoter of that change – lost his motivation and sense of purpose once Paul left school. This reaction by John suggests that the progression of change is more likely to be disrupted when it is 'person driven' than when it is 'school or team driven'. For it may be that when persons depart, they could leave a debilitating void behind them unless those they have led have also been prepared to progress on their own or the school in which the change is happening already has adequate structures to continue encouraging and supporting that change. It therefore appears necessary that schools become places of teacher learning (see Korthagen et al., 2006) that not only embrace individual or team initiatives, but also readily extend their structures and resources to such initiatives so that these may eventually become part of a whole-school approach to teacher professional learning.

Inviting Reflection, Inspiring Change

John's story reveals that a teacher can change along the lines of the current "global education policy attempt to move school mathematics learning towards deep conceptual understanding, rigorous reasoning, and genuine problem solving, in response to the perceived needs of 21st-century society" (Golding, 2017, p. 502). In so doing, John has succeeded where many other teachers, even from among those who claim to favour such reforms, have failed (see Golding, 2017). The possibility of pedagogical improvements in mathematics is particularly welcome because, as Esmonde (2009) points out, it is considered by societies worldwide to be an important school subject in view of its gatekeeping role to a variety of education and career opportunities. One can therefore argue that even with high status school subjects, such as mathematics, the possibility exists for professional learning initiatives that encourage, develop and sustain change in which teachers believe and are comfortable with. But John's story also signals caution, as there is evidence to suggest that change can be ephemeral unless teachers continue to find a supporting and nurturing environment. In fact, it is requiring a lot of determination on John's part to continue with his change journey following his recent setbacks at school. Still, the uneven path that has delineated his professional transformation probably carries the additional

appeal of authenticity. For the ups and downs of his journey present a narrative of a 'normal' teacher that people can relate to, reflect on and gain valuable insights from. As such, his story has the potential to inspire a 'sense of' and a 'desire for' change in a variety of interested professionals.

Reflecting my awareness that teacher learning, and consequently teacher change, is situated in given contexts and cultures that cut across space and time (Attard Tonna & Shanks, 2017), I would not encourage other teachers to look at John as a 'model' to be emulated. Instead, my aspiration is that he inspires them, as he has inspired me, to believe in and open up to the possibility of change. Moreover, in the knowledge that ITE needs to be considered as the first step in a process of ongoing professional learning (Stephens & Crawley, 1994; Bezzina, 2002; Anderson, 2004), I would suggest further that other professionals – such as heads of department, education officers, school administrators, teacher educators, and policy makers – stand to benefit from becoming aware of and reflecting on John's story. One hopes that the insights gained by these professionals could then contribute towards the development of an overarching teacher education system in which, as Bezzina (1999) suggests, teachers' professional development is addressed strategically, not haphazardly as often happens. This would enhance the quality of teachers' professional development and consequently the quality of teachers and their teaching (Walter, Wilkinson, & Yarrow, 1996). Should this happen, the students would be the ultimate beneficiaries because the improvement of their educational experience depends to a large extent on the development of teachers (Meissel et al., 2016).

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