

Teacher perceptions on the delivery and implementation of movement integration strategies: The CLASS PAL (Physically Active Learning) Project

Abstract

Children sit for extended periods in the school classroom. Movement integration (MI) methods (e.g. active breaks, physically active lessons) could be used to break/reduce sitting time and improve classroom behaviour and engagement.

Limited evidence is available on teacher perceptions of what influences the implementation of MI. Interviewed primary school teachers reported factors perceived to influence implementation at a variety of levels including individual (e.g. teacher and pupil characteristics, time, behavioural management) and school (e.g. whole school approach; and external to school expectations). In addition suggestions for increasing adoption and implementation of MI (e.g. communicating MI initiatives to schools) were identified.

Keywords: Qualitative, Interviews, Teachers, Classroom, Physical Activity, Sedentary Behaviour, Primary School, Children.

1. Introduction

Children of primary school age in the United Kingdom (UK) engage in sedentary behaviour ((low energy expenditure activities) in a seated or reclined position during waking hours (Sedentary Behaviour Research Network, 2012)) for between 5-7 hours per day (Griffiths et al., 2013). In addition, levels of participation in moderate-to-vigorous physical activity are low (Griffiths et al., 2013). Schools are frequently used as contexts for promoting children's health due to the ability to maximise reach, availability of existing resources, and possibility of curricular integration and sustainability (Fairclough et al., 2013). Children spend a large proportion of the school day seated and it is estimated that in primary schools children are seated for 50-70% of their time in the classroom (Clemes et al., 2015). Integration of physical activity into normal academic classroom time could break up or reduce sitting and may have added academic benefits such as improved attention to task, motivation and enjoyment of learning, and attainment in certain subjects (Grieco, Jowers, Errisuriz, & Bartholomew, 2016; Martin & Murtagh, 2017; Mullender-Wijnsma et al., 2016).

A number of methods to integrate physical activity within the classroom have been trialled (Norris, Shelton, Dunsmuir, Duke-Williams, & Stamatakis, 2015a; Webster, Russ, Vazou, Goh, & Erwin, 2015b) and these, broadly speaking, can be termed as movement integration (MI) interventions. In general MI approaches have included breaking lesson time with short (3-5 minutes) physical activity breaks of varying intensities. These are often referred to as movement breaks, energisers, or fitness breaks and are delivered with or without associated educational content. MI can also include more extensive activities where lessons incorporate physical activity into the delivery of academic content, for example by counting steps walked around the

room to estimate distance. As well as these more traditional MI approaches, environmental restructuring via the introduction of standing desks (Clemes et al., 2015; Sherry, Pearson, & Clemes, 2016) or activity equipment (McCrary-Spitzer, Manohar, Koepp, & Levine, 2014) into the classroom has also been trialled to promote a reduction in sitting and an increase in standing and/or stepping. Delivery of MI in primary schools, although likely influenced by senior school leaders and colleagues, is largely under the control of the classroom teacher. It is particularly important, therefore, to understand teachers' perceptions of factors that may influence this, and how they can be engaged and supported to deliver MI (Webster et al., 2015b).

Teachers' perceptions of using MI in primary school classrooms have been examined in a number of qualitative studies, which have largely been conducted in the United States (Cothran, Kulinna, & Garn, 2010; Finn & McInnis, 2014; Gately, Curtis, & Hardaker, 2013; Goh et al., 2013; Howie, Newman-Norlund, & Pate, 2014; McMullen, Kulinna, & Cothran, 2014a; Norris, Shelton, Dunsmuir, Duke-Williams, & Stamatakis, 2015b; Vazou & Skrade, 2014) and have offered some insight into barriers to and facilitators of both the delivery (i.e. the behaviour of carrying out MI) and implementation (i.e. the processes by which MI is integrated into routine practice within the school/classroom) of MI. For example, possible threat to classroom control from active breaks is a particular concern for primary and secondary school teachers, and pupil enjoyment and connection to academic content may positively influence their decision to implement breaks or not (McMullen, Kulinna, & Cothran, 2014b). To date, however, studies have largely focused on understanding delivery issues related to a single standardised MI intervention (e.g. Moving to Learn Ireland'

- McMullen et al., 2016). There is a distinct need for further work to a) examine teacher's perceptions of issues related to the delivery and implementation of a comprehensive MI approach (i.e. not simply responses to a specific programme/product), and b) a wider range of MI types (i.e. breaks, physically active academic lessons, active routines, standing desks etc.). In addition there is very limited evidence in relation to teacher perceptions of MI in the UK primary school context.

The CLASS PAL (Physically Active Learning) project aims to co-produce (with teachers and schools) and evaluate a MI package to support primary school teachers in reducing and breaking-up the sitting time of pupils in the school classroom. As part of the intervention development work for this project, primary school staff were recruited to take part in qualitative interviews and focus groups to explore their current MI practice, views on previously published MI strategies, MI resources and training needs, and factors perceived to be associated with implementation of MI interventions.

The aim of this paper is to present a focused analysis of data exploring primary school class teacher's views on MI to identify perceived factors associated with MI delivery and implementation in the UK primary school environment.

2. Methods

2.1 Ethics

Ethical approval was granted by the University of Loughborough Human participant's ethics sub-committee (SSEHS-1824, 16/03/2015). All participants provided written

informed consent prior to participation, and were informed of their right to withdraw at any time without negative consequence. All gathered personal data were anonymised using a unique identification number, with all hard copy data securely stored in locked filing cabinets/drawers and electronic information stored on password protected university computers/servers.

2.2 Sampling, recruitment and participants

A purposive sampling approach was used. Initially 4 schools in the city of Leicester and 5 schools in the town of Loughborough (all in the East Midlands region of the UK) were contacted via an email detailing the study aims and requirements of involvement. These introductory emails were followed up with a phone call or repeat email from a member of the study team. One school gave consent and an interview/focus group date was arranged. Next, all 28 primary schools within the town of Loughborough (with available information from <http://www.education.gov.uk/edubase/home.xhtml>) were emailed, and those schools who replied were followed up with a phone call. In addition teachers with existing links to the study team were also contacted.

In total 19 teachers and six teaching assistants were recruited from 6 schools. The majority of participants were female (21/25) and their years of experience ranged from 1 year to 31 years (Table 2).

2.3 Procedure

Semi-structured face-to-face interviews were primarily used in this study. Where schools wished to limit the time burden of their teachers' participation, or where a number of teachers were available at a given time, focus groups were used to

maximise data capture. In the interviews participants were questioned individually with no other school staff present, and in most cases were conducted by one member of the research team experienced in conducting qualitative interviews (XX or XX). Likewise focus groups were facilitated in most cases by one member of the research team experienced in running focus groups (XX). Interviews averaged 41 minutes, and focus groups 37 minutes. Interviews and focus groups were conducted between March and July 2015 and took place either in schools or at Loughborough University.

At the beginning of each interview/focus group participants were provided with a brief description of the study aims and clarification on what constitutes sedentary behaviour and MI. A semi-structured topic guide was used to frame discussion around their current MI practice, published MI strategies, resources/training needed to implement MI, engagement/recruitment, and a range of implementation issues. To facilitate discussion on MI strategies detailed in the published literature and to ensure teachers were clear on what MI is, the interviewer gave participants examples of MI resources and/or photographs of environmental restructuring (e.g. standing desks). The topic guide was refined as the study progressed. At the end of the interview/focus group the key points raised were summarised back to the interviewee for clarification and/or further discussion. Although brief and informal this respondent validation likely limited the probability that participants views were not misinterpreted (Barbour, 2001).

2.4 Data handling and analysis

Interviews and focus groups consisted of interaction and response between participants and the interviewer/facilitator, which was digitally recorded and transcribed verbatim into Microsoft Word (Microsoft, Redmond, WA, USA) by an external transcription company. Analysis followed the thematic analysis approach presented by Braun and Clarke (2006). Transcripts were first read and each response line was coded (by XX) and given a name to summarise the main concept of the sentence. Although the interviews were guided by a focused set of apriori topics, codes were primarily drawn from the data and formed inductively. These codes were then sorted into meaningful groups of preliminary themes. Care was taken to ensure that codes were both coherent within the theme allocated and distinct from those located within other themes. Next, themes were given a name and definition and a codebook was created. This codebook was then shared with another member of the research team (XXX) and two peer de-briefing sessions took place (with XXX) to develop sub-themes and consolidate the codebook which included a theme name and description, sub-theme names and description and a representative quote for each sub-theme. The finalised themes and sub-themes were written up as findings with accompanying verbatim quotes to represent themes.

In order to establish the credibility and consistency of theme generation (Noble & Smith, 2015). The finalised codebook, and two randomly selected quotes for each theme, were shared with independent members of the research team (XXX and XX). The agreement between the coder (and the original analyst - XX) was 87.5%, suggesting that themes developed were appropriate and consistently coded (Hruschka et al., 2004). In addition, and to enhance the integrity of the research

process, peer-debriefing meetings were held with other members of the research team to limit bias, and immediate verbal respondent validation was used to ensure the concepts discussed in the interviews adequately represented participants' views.

3. Results

A total of 10 individual interviews were conducted with at least one interview per school. A total of 3 focus groups, in 3 separate schools involving a total of 19 participants were conducted.

3.1 School/teacher characteristics

Insert Table 1 and 2 here

The 6 schools from which the participants were drawn included one fee-paying independent school and 5 non-fee paying schools of varying status (voluntary controlled, academy converter and community (Table 1). All schools catered for children aged 4-11 years, and ranged in school size (44-509-pupils). Schools ranged in free school meal eligibility deprivation scores (3.9-15% (mean=8.26%), and in overall school effectiveness rating (via a national school inspection body called Ofsted).

The 25 participants included 2 head (Principal)/ deputy head teachers, 16 classroom teachers, and 7 teaching assistants, drawn from a total of 6 schools (Table 2). Five of the 25 participants were male, and the total sample ranged from having 1 to 31 years of teaching experience. Participants taught/assisted across the entire

spectrum of primary school stages, from foundation year (age 4-5 years) to year 6 (10-11 years).

3.2 Themes

Seven themes were identified – See Table 3 below for more detail.

Insert Table 3 here

3.2.1 Theme 1: A whole school approach is important.

A core theme that emerged from the data was the need to take a whole school approach to support teachers in the implementation of movement within the classroom. This was deemed necessary to enable teachers to overcome barriers to MI and facilitate implementation. Participants discussed three key areas within this overarching theme and these are represented as the sub-themes of senior management support, sharing practice among teaching staff, and integration across year groups presented in Table 3.

The involvement of senior management is the first sub-theme and was suggested to be important to ensure that classroom teaching staff are encouraged and supported in the implementation of MI, and that it is something that is perceived to have value within the school. This was demonstrated by a deputy head teacher who said:

I think the overriding thing that's in my head is, if you do want to implement something like this, it really has to be a whole school thing. It has to come from the head and the governors. It has to be followed up and monitored and probably fed into performance management. Any big initiative that's come in

or whatever the school's focusing on, it really has to be implemented and embedded wholly. If it's just an inset day and it's not followed up and nobody's ever asked about it afterwards, it just goes, especially if you haven't got that lead person to keep it ticking over. (P18)

Other participants suggested that non-implementation may occur due to teachers forgetting about the initiative and sitting in their 'comfort zone' whereas senior management support and involvement in the initiative should prevent this happening, for example, a class teacher noted:

If you just get one member of staff coming, they'll try it in their classroom, they might get a chance to mention it in a staff meeting if it hasn't already run over. But actually getting it into the rest of the school often doesn't happen...Whereas if you're getting some of the hierarchy on board then hopefully they'll make those decisions and they'll make the training happen. So it's definitely better to go in at that level if you can (P9)

However, a more prevalent reason that teachers require senior management support may be due to the school's overriding focus on academic performance in core curriculum subjects resulting in these areas being prioritised within class time and teachers protecting time spent on these subjects from MI initiatives. For example, the deputy head teacher noted that teachers need to be:

"...encouraged to do it and perhaps...at every staff meeting each week, you just have five minutes to say who's done something new this week...You've got

to keep it in the limelight for teachers because it will - unfortunately, reading, writing and maths is the most important thing...for us then, for your results, so unless it is wholly implemented and monitored and watched, it won't happen. It just won't happen (P18)

This suggests a need to influence school policy and ethos on a much deeper level, ensuring that teachers feel that MI is valued and prioritised within the school and teachers do not feel that they are limited in the subjects that they can trial MI in.

The second sub-theme related to the need for a whole school approach is sharing practice amongst teaching staff. Whilst many new initiatives adopt a 'train the trainer' approach to diffuse said new innovation, participants suggested that this approach would only work within a whole school policy in which the adoption and integration of the initiative was supported by senior management. For example, a head teacher noted that:

You've got to about it that way, you can't have an individual teacher coming back off a training session saying, "Oh, the guys are running around a classroom over here," you've got to go the whole school approach, you've got to have it accepted and evaluated with the whole staff as well, so that they're perceiving it as something which they're including, rather than just one individual coming and saying, "Look what I've discovered," because it won't work at that level (P1)

With a class teacher emphasising, “quite often they don't have the time with the rest of the staff to do that cascading...so unless there's a staff meeting that's been earmarked as so and so has been on this course, they're going to come and cascade it to the rest of us” (P9). A final sub-theme, and once again integrally linked to the previous two sub-themes, is the significance of implementing the integration of movement across all year groups as opposed to simply one or two classes/year groups in isolation. The deputy head teacher reflected how:

With foundation stage, you really don't have them sitting still hardly at all, but then as each year group goes up, they sit still for longer and longer and longer. So I suppose the higher up the school you go, the more sitting they do (P18)

Participants suggested that to keep an element of movement in all classes from foundation stages/early years up to Year 6 (age 11 years) would be most sensible and least disruptive to both teachers and pupils. For example, a class teacher stated:

If you're going to do it you've got to do it from early years up to one and two, up to three and four, up to five and six. By the time they get to year five that is the accepted practices (P2)

3.2.2 Theme 2: Teachers have limited time for planning and delivery

Within the first theme, participants noted the need to feel supported in prioritising MI within their lessons, particularly in schools where academic achievement in core subjects is highly valued. This supportive element is most likely necessary due to the second key theme that emerged from the data, that of time, which can be further

sub-divided into three sub-themes of time for planning, for delivery and time constraints related to meeting UK National Curriculum aims. Time pressures connected to existing challenges with covering required curriculum content and timetable demands were most commonly noted with many participants referring to a “demanding” and “squashed” timetable and “worrying that you’re not going to get what you need to get done”. For example, one class teacher said:

So we’re aware that the children need to be out of their seats. We’re aware that they need to move and need to change to get them back to concentrate. But actually the timetable is so demanding, that’s obviously from above, that it’s so demanding that sometimes it’s not possible (P6)

Requirements to evidence attainment and progress also influences the way in which teachers choose to deliver material with another class teacher noting:

I mean, I don't think it's going to be something that teachers go, "Oh, I've never thought about that before." I think teachers will say, "Well, yeah, we need to be doing that." But things like, you know, evidence, requirements of attainment and progress, all those things just slowly, slowly squash everything that is, you know, you want to be doing (P24)

The daily considerations and practicalities of time constraints are perhaps best demonstrated within this reflection from a newly qualified class teacher:

“I do get to school at seven and I will spend, you know, a good hour and a half before my working day thinking about how I could teach the lessons rather than just rocking up with my plan and teaching it. I like to spend time – because that's what I enjoy. I enjoy that bit about the job and thinking about how I can make it more exciting. And I can spend, you know, time after school doing the same, moving my room around, thinking, "Oh, what am I doing tomorrow? I'm going to do it like this....I do get home at seven and then mark during my evenings if you're trying to ask them [other teachers with more limited time] to change their planning of things, they'll need more time to think about how to do it and prepare your resources, prepare your lessons (P24)

When considering these daily practicalities and the everyday reality for many teachers outlined in this reflection, suggestions from other participants to “keep it simple”, “not take a lot of time to implement” and “not take a lot of time to set-up” appear meaningful.

3.2.3 Theme 3: Perceived external expectations inhibit new practices.

Within the previous theme, many of the time pressures were related to concern associated with external evaluation, and the influence of external factors such as Ofsted¹ and parental opinions emerged to form the third key theme within this study. The results of Ofsted inspections are often perceived by teachers to form the cornerstone of school policy. Teaching activities and assessment protocols are often designed and delivered to clearly demonstrate key learning outcomes. For example, the deputy head teacher noted:

¹ Ofsted is the Office for Standards in Education, Children's Services and Skills. They inspect and regulate services in England that care for children and young people, and services providing education and skills for learners of all ages.

Whatever Ofsted are looking for, that is what every school is doing. So we had our Ofsted in February and, for the last few years, ever since I've been there, my head's like, "Right, they're looking for this now, so we've got to do some reading," or they're looking for SMSC (Spiritual, Moral, Social and Cultural), or they're looking for multicultural and what we do in that. So whatever Ofsted are looking at, that tends to be what schools do (P18)

Furthermore, Ofsted inspections happen with minimal notice; therefore, teachers are constantly considering how their lesson planning and delivery will be evaluated by an Ofsted inspector. Bearing this in mind, teachers appear to approach new and innovative teaching methods with a degree of uncertainty and a lack of openness. One class teacher provided this insight, "I think anybody with Ofsted, an Ofsted inspector sitting in the corner of your room, they would have to be the most confident person in the world to risk doing that, you just wouldn't do it" (P10). Participants indicated that if MI was something that Ofsted were expecting to see they would be more likely to ensure they implemented it. For example, another class teacher intimated:

If you've said that you've related it to the national curriculum or you've talked to Ofsted and they agree that this is going to happen, schools are going to be much more receptive. They're going to definitely get on board with it because that's what we're being judged by and judged on. So if we can do something that we think's going to help us towards getting better as a school, definitely. (P24)

A secondary sub-theme of external expectations formed when participants also commented on the influence of parents, specifically parents perceptions of MI and the perceptions that parents may be concerned about the potential negative impact of MI on learning. Most participants felt that, as long as parents were convinced that it would have a positive impact on learning, it would not be negatively received. However, the head teacher posted a view contrary to this and suggested that:

Parents would think their child should be sitting down and writing for the full hour and working...I think parents see sitting down at tables linked with control, linked with behaviour, linked with attention, all of those things...so sitting is the way that we do it, and it sells the image as well (P1)

This raises an interesting issue around accepted norms of certain sedentary behaviours and the role of wider society and traditional learning environments in perpetuating these norms.

3.2.4 Theme 4: Need to take account of individual differences in order to deliver MI

Participants highlighted a number of individual factors that pupils may present that could impact their ability and motivation to engage in MI. Three key sub-themes identified were, individual readiness to move, pupil approach, and gender differences. Teachers expressed a clear distinction between girls' and boys' behaviour in the classroom. In younger children, boys appear to be "fidgety" and relaxed in the classroom with class teachers noting:

I think a lot of the boys particularly are just lollers, like lying on the floor (P16)

and

You'll often find in foundation, groups of boys with papers spread around them on the carpet just laying on the tummies and writing like that. They'd much rather be on the floor writing than sitting at their desk (P13)

However, in older children, gender differences highlighted by teachers were related to girls' levels of self-awareness with one class teacher stating:

I suppose if you're looking at year five, you know, they're ten years old and, you know, you've got to think of self-conscious girls at that age. Girls don't like to be jumping around in front of boys very much. You know, you've got all those things to take into account when you're getting into that age (P24)

These individual difference factors also influence the way in which pupils might approach MI in the classroom with some pupils being more or less enthusiastic about an activity than others, something teachers will need to manage to ensure successful implementation. This approach may also be influenced by pupils' readiness to move with participants highlighting pupil fitness levels as having a negative impact on their ability to stand for periods of time and to engage in light intensity physical activity which may be required within a MI initiative. A teaching assistant noted that:

I have to say, over the years I've noticed when we go for a walk in the local area, even just a short walk, now the children are very tired. They're tired like while

you're out walking and they're tired when you come back, whereas when I first started teaching, we'd be like, "Yeah, let's go for a walk." And they'd be absolutely fine, come back still full of energy. So I think, you know, their lifestyles at home are obviously having an impact (P19)

This viewpoint was supported by other participants who stated that, "They're always sitting down, even at home they're on their computers, they're driven everywhere and so they will find it hard. They're not fit and not used to it" (P5). However, while this may be the case, another class teacher said:

I think any activity in the school is going to benefit the children. And you know, I – it's important to promote that. Especially this day and age where when they get home they're just sat on their – you know, so they don't go out like we used to. They don't get that freedom that we did. So they do go home, sometimes, no offense to parents, sometimes they haven't got time for them. So if they are doing more during the day, at least that's keeping them going for when they do get home (P23)

3.2.5 Theme 5: Need to take account of constraints in the school environment.

A small number of teachers detailed characteristics of the physical environment or school policies to be of relevance to the implementation of MI. This fell into three-sub themes relating to physical space, weather and suitability of pupil clothing. For the first and most prominent sub-theme this was represented by a concern over the available physical space in the classroom for physical activity, and fear for the safety of pupils regarding the potential for accidents due to the amount of furniture in close

proximity during activities. However, there were some suggestions that reorganising classroom furniture or utilising alternative spaces in close proximity to the classroom could provide a solution: “I mean another thing that I do, which some teachers, you know, don't like doing is that I'm happy to literally move tables and chairs round within the classroom. And you know, that's the children being active” (P9). Alongside the more prevalent mention of physical space constraints, weather was noted as being a barrier to outdoor MI with outdoor teaching deemed difficult to deliver in poor weather and alternative hall spaces often being fully booked.

Interestingly one class teacher identified the wearing of more traditional school uniforms such as shirts and ties as potentially constraining MI in older primary school pupils due to the potential for uncomfortableness to arise from sweating:

And if you're asking them to, you know, in the middle of a maths lesson to jump up and run around, you know, you've got to think about girls and boys sweating at that age as well and end up feeling comfortable (P24)

3.2.6 Theme 6: MI impacts upon and is affected by pupil behaviour

A theme that was recurrent throughout the interviews was that of behavioural management. This was conceptualised by teachers as MI potentially having both a positive and a negative impact on classroom behaviour (which form the two sub-themes). For example it was suggested that MI can be used as a tool to ‘re-focus’ pupils when they have been sitting for extended periods and may lose interest/concentration in the present task. Some class teachers further expressed the

notion that an active break can be used to curtail unwanted individual behavioural incidents:

But then again it can have its benefits, because if you do something like that and then come back in the room, so if behaviours – because it sometimes kicks off in the classroom. I will stop and we'll go out and do something and it definitely has a positive impact on that particular child that I'm trying to, you know change their mind-set (P10)

The suggested positive behavioural effects were also expressed with caution. For example one teacher stated that initial implementation may be “hard work” at first, but that stable behaviour would result from structured and consistent delivery – the formation of a routine.

Alternative views were given regarding MI as a challenge to managing classroom behaviour. In particular teachers were concerned that classroom physical activity could negatively influence a “calm and settled” working environment, and they fear a loss of control and additional time to get pupils back on task: “Yeah it would be the control, it would be the biggest concern. Am I going to let these children go off and do something and then how long is it going to take me to get them back on task” (P10). These issues were however deemed to be dependent upon the characteristics of the class and their behavioural record:

And it will – it depends with your class. You know, we've got quite a few behavioural issues in our school and I imagine in a classroom if you suddenly ask them to jump up and run around, you'll probably lose about three. And

then you've got five minutes to kind of get everybody settled back down and – but then I suppose it's a culture. If you do it every day continuously, they'll get used to it and it will just become second nature (P24)

Furthermore, a number of teachers suggested that in the face of such fears around negative behavioural impacts, teachers confidence in their ability to deliver MI and or feelings of competence regarding their behavioural management ability is important for implementation:

Yeah, definitely. It definitely comes down to confidence and their confidence in their own behaviour management ability to get them up and moving because every teacher's nightmare is, oh my god, I've lost control (laughter). So it tends to be the weaker teachers are less confident (P18)

3.2.7 Theme 7: Teachers perceptions and characteristics are important

Similar to behavioural management issues, views on the adoption and implementation of MI appeared to be related to a number of individual teacher characteristics, namely four sub themes of teaching style, confidence, values and autonomy. A particularly interesting sub-theme that became apparent is the value placed on physical activity by teachers. A small number of teachers postulated that their interest or background in physical activity participation predisposed them to valuing MI as a means to increasing their pupil's daily physical activity which they already see inherent value in:

“Because my background's physical activity, that's why I value it and I can see the value in it.” (P5)

It was further suggested that teachers' attitudes towards MI may therefore need targeting if they are to adopt a more active teaching style, particularly in light of ensuring progression towards learning outcomes:

And I think it would just be changing peoples' attitudes, so maybe providing – you would probably either need to have a member of staff on board that's very up for it and happy to do some CPD for the rest of the staff. I think it would be a big ask to say to teachers, we want you to teach these practical lessons, teach, I don't know, science, electricity through practical activities. It's going to need something to persuade those teachers that the children are going to meet the outcomes that they're supposed to be doing. You're going to be, you know be teaching what you're meant to be teaching (P10)

Besides targeting teacher values/attitudes, it became apparent that future MI programmes may require consideration of individual teaching approaches, both in preferences for particular strategies and overall teaching style. It was suggested that this could be mitigated to a certain extent by providing supporting teaching resources that can be adapted, or through the provision of skills training:

I think if you're handing something to them on a plate, they'll take it off you so if you prepare some lesson plans across the curriculum showing how they could be more active, I think fine as examples and they'll take them off you and they'll use them or adapt them slightly to meet their own classes' needs but I don't think you'll have them on board. I don't think that will equip them with the skills because you're just handing it to them on a plate so I don't think they'll then carry on with it on their own. They'll use it for that period of time and think this is great. Some of them might carry on with it if they see the

benefit but if they don't see the benefits quickly then they won't be convinced by it and they won't carry on with it (P5)

This very much related to the mention of having autonomy over the use of MI in the classroom i.e. a non-prescriptive/standardised intervention. One class teacher in particular noted: "teachers needs to feel that it's up to them to try and do it at some point every day, but to gauge when it suits their particular class the best" (P9).

Likewise, and also related to supporting teachers, confidence in delivery of MI was depicted as a potential reason as to why teachers may favour a more controlled sedentary classroom environment.

4. Discussion

The aim of this paper was to develop a greater understanding of the views of primary school teachers on factors they perceive to influence the implementation of MI within a UK primary school setting. Seven major themes were identified which captured distinct areas of influence. This study found multifarious considerations that teachers regard to be important for delivery and implementation. These issues can be conceptualised as existing or operating on multiple levels within and beyond the school environment. For example, at the individual teacher level there were a number of influential issues reported such as time constraints, confidence required for delivery, value placed on MI/physical activity.

Whilst these themes are informative when viewed independently and provide insight into the facilitators of and barriers to MI, what may be more explanatory is to view these factors collectively and understand how they may work together to impact

delivery and implementation. One model that can be applied to these data is the socio-ecological model for health promotion (McLeroy, Bibeau, Steckler, & Glanz, 1988). This considers the different environments in which individuals engage as a nested series of systems with the most immediate environment being at the centre and the wider environments emanating out from this which interact with and impact on the inner environments. Furthermore, within that innermost environment, an individual's characteristics such as skills, behavioural history etc. combine with cognitive attributes to determine an individual's level of engagement within a given environment. Figure 1 demonstrates how this model can be applied to the findings of this study.

Insert Figure 1 here

The classroom is depicted as the innermost, immediate environment and specific themes can be considered to directly impact upon MI within the classroom, namely, teacher, pupil and environmental characteristics, alongside behavioural management and time. Therefore, on a daily basis, a teacher's inclination and ability to successfully deliver MI may be dependent upon their own individual teaching style, confidence in delivery, values, and the level of perceived autonomy of practice. For example, the data relating to confidence for delivery correspond to work from Webster and colleagues who examined elementary class teacher's physical activity history and self-reported MI implementation (Webster et al., 2015a) and identified perceived competence in delivery to predict actual implementation (41% variance explained). Further to the themes listed above, the actual and perceived amount of time the teacher has available may also impact on their ability to plan and deliver MI.

This latter point resonates particularly with previous data from teachers who have delivered MI. For example in a very recent study by Martin and Murtagh (2017), teachers reported time to be 'the only barrier', and also recently, McMullen, Martin, Jones, and Murtagh (2016) found teachers to limit or curtail integration when they perceived there to be limited time in their teaching schedule.

Moving beyond the teacher's characteristics and cognitive attributes, pupils' approach to MI, their readiness to move and their gender may combine to influence their overall engagement level in the MI activity. These pupil characteristics, combined with the teacher characteristics, may conceivably also interact to develop a level of behavioural expectation and/or management within the classroom.

Knowledge on this interaction is particularly important as teachers frequently report threat to classroom control particularly when transitioning back to normal seated activities (McMullen et al., 2016; Stylianou, Kulinna, & Naiman, 2016). For example Stylianou et al. (2016) found one of the most prevalent challenges reported by elementary school teachers implementing MI to be behavioural control following an activity, even after receiving extensive personal development training including management strategies.

Moving out from this immediate environment, the wider school setting appears to become influential, with the need for a whole school approach impacting on daily classroom activities according to the present data. Teacher time, especially in regards to meeting national curriculum aims, appears linked to teacher autonomy but both were suggested to be influenced by the ethos of the senior management team with the need for them to value and prioritise MI within the school. Messages delivered from senior management in this regard could directly impact on classroom

practice by influencing teacher characteristics (e.g. attitudes), time (actual and perceived), and even the physical environment that is made available to them. This is in part supported by the findings of Webster et al. (2013) who via a mediation analysis, interestingly identified that perceived support from the school positively influences adoption of MI via a number of indirect pathways e.g. trialability – the perception that a new innovation can be adopted on a trial basis (Webster et al., 2013). More widely the need for a whole school approach to implementation (McMullen, Ní Chróinín, Tammelin, Pogorzelska, & van der Mars, 2015), and practical or policy support from senior school leadership has been identified in previous physical activity intervention literature (Dowda, Sallis, McKenzie, Rosengard, & Kohl, 2005; Morton, Atkin, Corder, Suhrcke, & van Sluijs, 2016).

Moving more distally, the next layer of factors identified in this study can be conceptualised as being external to the school, namely school inspection (OFSTED) and parental perceptions of MI. Of most importance, teachers suggested that school policy and support for MI from senior management is influenced heavily by a schools approach to meeting national school inspection frameworks. As such there was suggestion that schools may have a tendency to support more traditional forms of teaching. Whilst external pressures such as meeting curriculum requirements (Cothran et al., 2010; Stylianou et al., 2016) have been identified in previous literature, this issue of school inspection is a particularly novel finding, which has not previously been reported.

Although not included in the results section a number of strategies/approaches that could be used by future MI interventionists to support adoption and implementation were discussed by the teachers. These included planning considerations, resource provision, professional development, communication with schools and outlining

benefits of MI. Of particular note is the need to clearly communicate to teachers and schools the potential positive impact of MI. This point very much aligns with previous data drawing upon diffusion of innovation theory suggesting the potential for observability (the perception that the innovation will produce observable results for key members of the social system) to influence teachers adoption of MI (Webster et al., 2013). The issues of simple to implement and accessible resources and the need for face-to-face professional development involving practical modelling of ideas has also been addressed in recent work by Stylianou et al. (2016), who suggested that resources must be simple to implement, easy to access and developmentally appropriate; and that professional development training should be continuous and involve management strategies as a core component.

4.1 Practical Implications

Taken together the findings of this study have a number of practical implications. Not all of the factors identified are modifiable for the MI interventionist – such as school inspections, school policy, curriculum time pressures etc; however, MI programmes can be designed to be sensitive to these issues. As an example professional development training should comprehensively target the expansion of skills related to the integration of academic concepts in short activities to mitigate against perceived curriculum pressures. Likewise, garnering head teacher and senior leadership support, to foster a whole school approach, could be supported by being able to demonstrate observability; further to build meaningful relationships with senior school leaders researchers could draw upon a useful checklist for approaching schools with new health interventions developed by Christian et al. (2015). Finally, of most importance to delivery and implementation is the targeting of

more easily modifiable factors, which are likely to be individual level teacher characteristics (e.g. values/beliefs held regarding MI, confidence to deliver MI etc.). Such an approach should have a theoretical grounding, for which Webster et al. 2013 have provided one exemplar of a useful framework by drawing on diffusion of innovation theory to identify teacher-related variables that influence adoption of MI. For instance skills training and resource development could specifically target, as identified by Webster et al. (2013) the modification of perceptions surrounding MI as being compatible with current educational practice in schools, simple to deliver, and observable as part of a successful school program.

4.2 Strengths and limitations

This study is unique in that it is the first to examine teachers' perceptions of factors influencing both the delivery and implementation of a wide range of MI strategies, and critically it also adds to the very limited evidence base on UK teachers' perceptions of MI interventions. In addition a range of types of schools and participants teaching roles/experience were represented in the present sample. The mean percentage of children eligible and claiming FSM in these schools however is lower than the current national average of primary schools in England (January 2015, 15.6%) (Department for Education, 2015).

4.3 Conclusion

Taken together the findings generated in this study serve to highlight the complexities of factors that may influence the implementation of MI in schools. Whilst

teachers should be at the forefront of any MI programme, future initiatives should give more consideration to the wider school context within which teacher's operate by addressing pupil, teacher, school and potentially external to school factors.

Moving forward, research should focus on further developing training, resource and equipment support, and identifying means of optimising teacher and school buy-in, particularly for those teachers/school leaders who see little benefit in MI.

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References

- Barbour, R.S. (2001). Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? *BMJ : British Medical Journal*, 322(7294), 1115-1117.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Christian, D., Todd, C., Davies, H., Rance, J., Stratton, G., Rapport, F., & Brophy, S. (2015). Community led active schools programme (CLASP) exploring the implementation of health interventions in primary schools: headteachers' perspectives. *BMC Public Health*, 15, 238.
- Clemes, S.A., Barber, S.E., Bingham, D.D., Ridgers, N.D., Fletcher, E., Pearson, N., Salmon, J., & Dunstan, D.W. (2015). Reducing children's classroom sitting time using sit-to-stand desks: findings from pilot studies in UK and Australian primary schools. *Journal of Public Health*, 38(3), 526-533.
- Cothran, D.J., Kulinna, P.H., & Garn, A.C. (2010). Classroom teachers and physical activity integration. *Teaching and Teacher Education*, 26(7), 1381-1388.
- Dowda, M., Sallis, J.F., McKenzie, T.L., Rosengard, P., & Kohl, H.W. (2005). Evaluating the Sustainability of SPARK Physical Education. *Research Quarterly for Exercise and Sport*, 76(1), 11-19.
- Department for Education. (2015). *Schools, pupils and their characteristics: January 2015*. National Statistics Retrieved from

<https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2015>.

Fairclough, S.J., Hackett, A.F., Davies, I.G., Gobbi, R., Mackintosh, K.A., Warburton, G.L., Stratton, G., van Sluijs, E.M., & Boddy, L.M. (2013). Promoting healthy weight in primary school children through physical activity and nutrition education: a pragmatic evaluation of the CHANGE! randomised intervention study. *BMC Public Health*, *13*, 626.

Finn, K.E., & McInnis, K.J. (2014). Teachers' and students' perceptions of the active science curriculum: incorporating physical activity into middle school science classrooms. *The Physical Educator*, *71*, 234-253.

Gately, P., Curtis, C., & Hardaker, R. (2013). An evaluation in UK schools of a classroom-based physical activity programme- TAKE 10! : A qualitative analysis of the teachers' perspectives. *Education and Health*, *31*(4), 72-78.

Goh, T.L., Hannon, J.C., Newton, M., Webster, C., Podlog, L., & Pillow, W. (2013). "I'll Squeeze It In": Transforming Preservice Classroom Teachers' Perceptions Toward Movement Integration in Schools. *Action in Teacher Education*, *35*, 286-300.

Grieco, L.A., Jowers, E.M., Errisuriz, V.L., & Bartholomew, J.B. (2016). Physically active vs. sedentary academic lessons: A dose response study for elementary student time on task. *Preventive Medicine*, *89*, 98-103.

Griffiths, L.J., Cortina-Borja, M., Sera, F., Poulidou, T., Geraci, M., Rich, C., Cole, T.J., Law, C., Joshi, H., Ness, A.R., Jebb, S.A., & Dezaux, C. (2013). How active are our children? Findings from the Millennium Cohort Study. *BMJ Open*, 3(8).

Howie, E.K., Newman-Norlund, R.D., & Pate, R.R. (2014). Smiles count but minutes matter: responses to classroom exercise breaks. *American Journal of Health Behaviour*, 38(5), 681-689.

Hruschka, D.J., Schwartz, D., St.John, D.C., Picone-Decaro, E., Jenkins, R.A., & Carey, J.W. (2004). Reliability in Coding Open-Ended Data: Lessons Learned from HIV Behavioral Research. *Field Methods*, 16(3), 307-331.

Martin, R., & Murtagh, E.M. (2017). Teachers' and students' perspectives of participating in the 'Active Classrooms' movement integration programme. *Teaching and Teacher Education*, 63, 218-230.

McCrary-Spitzer, S.K., Manohar, C.U., Koepp, G.A., & Levine, J.A. (2014). Low-cost and Scalable Classroom Equipment to Promote Physical Activity and Improve Education. *Journal of Physical Activity & Health*, 12(9), 1259-1263.

McLeroy, K.R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An Ecological Perspective on Health Promotion Programs. *Health Education Quarterly*, 15(4), 351-377.

Mcmullen, J., Kulinna, P., & Cothran, D. (2014a). Physical Activity Opportunities During the School Day : Classroom Teachers ' Perceptions of Using Activity

Breaks in the Classroom. *Journal of Teaching in Physical Education*, 33(4), 511-527.

McMullen, J., Kulinna, P., & Cothran, D. (2014b). Physical activity opportunities during the school day: classroom teachers' perceptions of using activity breaks in the classroom. *Journal of Teaching in Physical Education*, 33(4), 511-527.

McMullen, J., Ní Chróinín, D., Tammelin, T., Pogorzelska, M., & van der Mars, H. (2015). International Approaches to Whole-of-School Physical Activity Promotion. *Quest*, 67(4), 384-399.

McMullen, J.M., Martin, R., Jones, J., & Murtagh, E.M. (2016). Moving to learn Ireland – Classroom teachers' experiences of movement integration. *Teaching and Teacher Education*, 60, 321-330.

Morton, K.L., Atkin, A.J., Corder, K., Suhrcke, M., & van Sluijs, E.M.F. (2016). The school environment and adolescent physical activity and sedentary behaviour: a mixed - studies systematic review. *Obesity Reviews*, 17(2), 142-158.

Mullender-Wijnsma, M.J., Hartman, E., de Greeff, J.W., Doolaard, S., Bosker, R.J., & Visscher, C. (2016). Physically active math and language lessons improve academic achievement: a cluster randomized controlled trial. *Pediatrics*, 137(3), e20152743.

- Sedentary Behaviour Research Network. (2012). Letter to the editor: standardized use of the terms "sedentary" and "sedentary behaviours". *Applied Physiology, Nutrition, and Metabolism.*, 37(3), 540-542.
- Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence Based Nursing*, 18(2), 34-35.
- Norris, E., Shelton, N., Dunsmuir, S., Duke-Williams, O., & Stamatakis, E. (2015a). Physically active lessons as physical activity and educational interventions: a systematic review of methods and results. *Preventive Medicine*, 72, 116-125. doi:10.1016/j.ypmed.2014.12.027
- Norris, E., Shelton, N., Dunsmuir, S., Duke-Williams, O., & Stamatakis, E. (2015b). Virtual field trips as physically active lessons for children: a pilot study. *BMC Public Health*, 15, 366.
- Sherry, A.P., Pearson, N., & Clemes, S.A. (2016). The effects of standing desks within the school classroom: A systematic review. *Preventive Medicine Reports*, 3, 338-347.
- Stylianou, M., Kulinna, P.H., & Naiman, T. (2016). '...because there's nobody who can just sit that long'. *European Physical Education Review*, 22(3), 390-408.
- Vazou, S., & Skrade, M. (2014). Teachers' Reflections From Integrating Physical Activity in the Academic Classroom. *Research Quarterly for Exercise and Sport*, 85, 38-38.

Webster, C.A., Buchan, H., Perreault, M., Doan, R., Doutis, P., & Weaver, R.G.

(2015a). An Exploratory Study of Elementary Classroom Teachers' Physical Activity Promotion from a Social Learning Perspective. *Journal of Teaching in Physical Education*, 34(3), 474-495.

Webster, C.A., Caputi, P., Perreault, M., Doan, R., Doutis, P., & Weaver, R.G.

(2013). Elementary Classroom Teachers' Adoption of Physical Activity Promotion in the Context of a Statewide Policy: An Innovation Diffusion and Socio-Ecologic Perspective. *Journal of Teaching in Physical Education*, 32(4), 419-440.

Webster, C.A., Russ, L., Vazou, S., Goh, T.L., & Erwin, H. (2015b). Integrating

movement in academic classrooms: Understanding, applying and advancing the knowledge base. *Obesity Reviews*, 16, 691-701.