Research or Rhetoric? Deconstructing the Norms of Young Language Learning

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Introduction

This study problematises the delivery of language learning in primary schools (PLs) in England. Problematisation may take different forms but essentially critically confronts a situation or premise in some way in order to find solutions (Sandberg & Alvesson 2011). Language learning is a complex process and the different aspects of the learning environment need to be taken into account in order to critically confront current issues. This study draws on literature regarding not only current PL practice and official policy in England but also of neurobiological findings pertinent to early language learning: its aim is to analyse factors that contribute to, and affect, PL practice including the human brain's propensities and aptitudes for such learning. My own previous experiences as PLs and secondary MFL teacher, and my current role as teacher trainee for PLs, provide useful insider acumen which is likely to influence my understanding of, and insight into, actual PL practice; neurobiological findings are entirely drawn from the literature. Recognising the need for practice to be underpinned by theory, a brief discussion of language learning theories is given to rationalise and explain the various stances likely to influence schools' practice and teachers' beliefs. The study thus aims to link three perspectives of PL practice: the current situation in England, including rhetoric and governmental policy; language learning theories and their application; and the guidelines for such learning provided by neurobiological findings.

To that end, the framework of Activity Theory is deployed to analyse current practice from these three perspectives. It is described in the next section.

The analytic framework of the study

Any study of learning *processes*, rather than outcomes, requires a framework which reflects the complexities of the learning environment. Instead of the direct linear relationship between a stimulus A provoking the response B (fig. a, below), commonly the basis to find out the effects of an intervention or stimulus, Leont'ev (or Leontijev) (1981) proposed that the tool (or instrument) of any task exerts an internal psychological influence; thus there is a conceptual triangular relationship between the stimulus of the activity, the response and the tool mediating it.

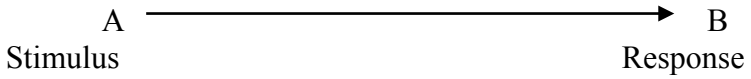

Fig. a Unidirectional 'cause and effect' dynamic

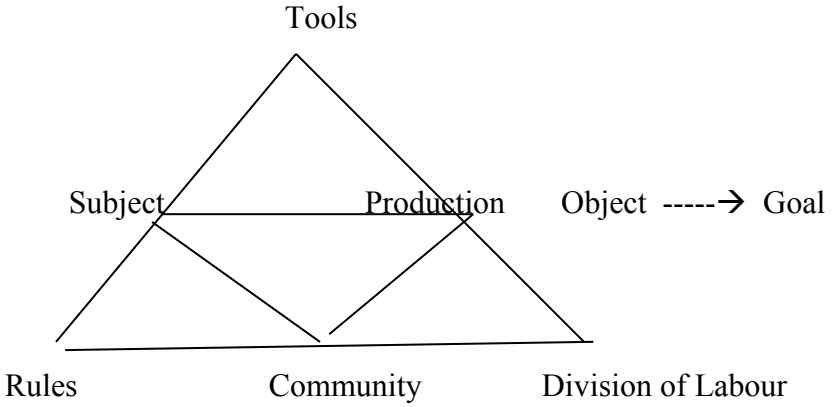

Fig. .b Activity system (from Jonassen and Rohrer-Murphy, 1999: 63)

By recognising the inseparability of learning and doing, Activity Theory places the 'doing', the activities themselves, in prominent focus and interdependent with the contextual factors within which those activities take place. A developmental process within a *socially* mediated context (schematised in fig. b) recognises the activities of other human beings and social relations within a community of people engaged in realising a common goal.
Applying the factors to PL learning as a classroom-based activity, the 'subject/subjects' are pupils, while the 'object' of the activity/activities is learning PLs, which is mediated by certain 'tools' or artefacts. 'Norms' or rules of previous practice are likely to be inherited from previous practice. The 'community' involved in PL practice may consist of not only pupils and teacher/s but also the extended community of parents and other stakeholders.
The framework's parameters thus may be employed to describe the complex process of learning a language, and the different contributory contextual factors all of which are interconnected within the learning environment and, importantly, influence the processes under study (fig c).

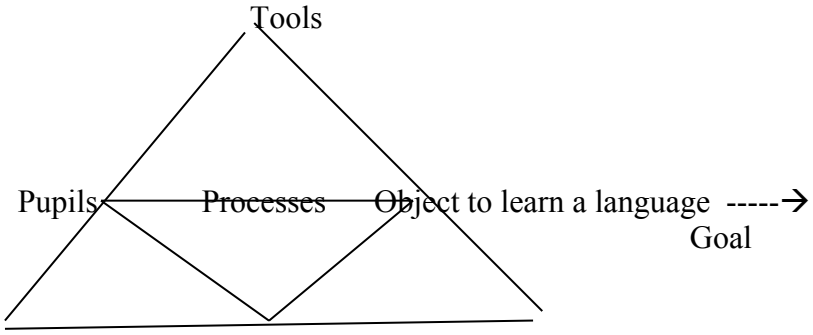

Fig c PL practice schematised within Activity Theory

While current primary school learning environments are influenced by the 'rules' of governmental rhetoric and policy, this study also looks to pointers from neurobiological research to provide insights into effective PL learning *processes* and who should deliver them. To contextualise this further, the next section looks briefly at current PL practice in England, as described in recent reports.

The current PL situation
PLs were made statutory within the primary curriculum in September 2014 for key stage 2 pupils (aged 7 – 11) in England, some 50 years after a previous pilot study was abandoned (Burstall 1974). Brief governmental guidelines for PL learning (DfE 2014) allude to desired skillsets for pupils to attain, rather than to learning approaches to be adopted. However, a previous government's publication, the Key Stage 2 Framework (DfES 2007), provides suggested lesson content with some indications of activities and the skills to be attained. Standard inspections of PL practice by OfSTED (Office for Standards in Education) have yet

to be published while current PL practice is patchy and diverse (Tinsley & Board 2016); its processes therefore require review. The British Council annually surveys language practice in schools in England and reports, for the first time since 2012, that:

> 'Almost all primary schools in England now provide at least some teaching of languages to pupils throughout Key Stage 2, and just over one third of schools now have access to specialist expertise in the teaching of languages within the school. However, there is evidence that some schools are finding it challenging to provide the kind of systematic and consistent language teaching envisaged in the national curriculum.' (Tinsley & Board 2016)

Specialist expertise does not guarantee knowledge of good primary pedagogy in the PL practitioner (Driscoll 1999). Without learning theories to underpin and analyse its findings, the study's results tend to be statistically descriptive of current practice in the PL initiative, although case studies are included in its pages. While citing other challenges to PL practice, such as curricular time constraints, and teachers' confidence in accommodating languages in the curriculum (which are discussed later), consideration is missing of young learners' aptitudes for learning languages. Indeed, a lack of understanding of how children may learn or acquire a language, or how 'the child's intellectual development' (Crystal 1987: 234) may be harnessed, may have propelled the policy to omit key stage 1 pupils from statutory PL learning. Because every school will be accountable for meeting policy requirements, the next section reports on recent governmental policy and discusses its potential effects on current cohorts of trainees joining the profession.

Policy

The national curriculum requirement for 'substantial progress in one language' (DfE 2014: 213) has two important implications. Firstly, the study of more than one language deploys curricular time which is reportedly already limited. Secondly, the 'substantial progress in one language' requires greater expertise and confidence in teachers delivering the subject over potentially four years in key stage 2 (for pupils aged 7 – 11). This may increase schools' reported struggle to staff the PL provision (Tinsley and Board 2016). While there is a requirement for an 'appropriate balance of spoken and written language' (DfE 2014: 213) for learning a modern language, no stipulation is given of what that balance might be, nor how this may be interpreted for different age-groups. The processes of PL practice are therefore insufficiently defined or understood, neither are there stipulated requirements for class teachers to be involved in delivering PL learning, as a 'division of labour'.

Different stipulations are given for the learning of ancient languages:

> 'the focus will be to provide a linguistic foundation for reading comprehension and an appreciation of classical civilisation. . . .[pupils] take part in simple oral exchanges while discussion of what they read will be conducted in English.'
>
> (DfE 2014: 240)

These skill-bases contrast pronouncedly with those given for modern language learning, particularly in the lesser part played by phonology. Given the potentially high percentage of lesson time to be conducted in English discussion, rather than the ancient language itself, the question arises as to what proportion of this practice is language learning per se.

A further policy may have affected the language skills of teachers entering the profession; the intention to implement language learning for key stage 2 pupils (aged 7 – 11) (DfES 2004a), hitherto largely the domain of secondary school learning, coincided with its demotion at key stage 4 (pupils aged 14 – 16) to optional status (DfES 2004b). The legacy of such a demotion on staffing PL provision is that current cohorts of primary trainees may have undertaken only 3 years of learning a modern language, with subsequent effects on their confidence levels to support PL learning as future teachers. Lack of PL subject knowledge and/or pedagogical skills amongst primary staff (Tinsley & Board 2016) may propel schools to bring in outside expertise. If deployed during class teachers' planning, preparation and assessment (PPA) time (a statutory right for minimally 10% of a teacher's timetable (DfES 2005)), there are implications for PL practice. Firstly, the class teacher's PPA time is ring-fenced for the three activities of its title and therefore class teachers are highly unlikely to be present during the specialist-led PL session. In this case, the class teacher does not learn from the outside 'expert' nor build confidence for supporting PL practice. The normally weekly timetabling of the class teachers' PPA time along with PL sessions has potentially even greater impact on the efficacy and nature of pupils' language skills. This is due to the distinct requirements of time and timing for learning different skills involving both declarative and procedural knowledge. Declarative knowledge (knowing *what*) is distinguished from procedural knowledge (knowing *how*). For example, learning to speak a language cannot rely on declarative knowledge but must involve procedural memory. These different types of learning are outlined in the next section.

Declarative and procedural knowledge

An important paradigm distinguishing the learning of different language skills is that of declarative and procedural knowledge as distinct forms of memorisation. Procedural knowledge may be conceptualised as skills; these require frequent practice to become automatised until very little cognitive effort is required to perform them. 'Automatization is another name for acquiring procedural memory' (Lee, 2014). Thus the two forms of memorisation have distinct requirements for practice and activate different pathways in the brain (Schumann et al. 2014). The required repetition and 'exercising to help diminish the time necessary in order to access information and to operate the encoding' (Annoni et al. 2012) endorses the need for frequent practice sessions to ensure pupils' memorisation and progress.

Spoken exchange 'cannot rely on declarative knowledge' but must involve some procedural learning (Macaro, 2003:183) thus requiring practice in a 'little and often' approach. Were this 'rule' for time and frequency for PL practice adopted, class teachers should necessarily be involved because they teach their classes daily. To facilitate their pupils' practice of specialist-delivered weekly sessions, they need to know what their pupils have learned in that session. However, as discussed in the previous section, PPA time may deprive the class teachers of witnessing PLs sessions if it coincides with weekly, specialist-delivered sessions or extra-curricular clubs. Meeting the declared aims of the national curriculum, briefly outlined above, thus may be denied by the school's timetabling, and affected by staffing policy and funding. Thus 'rules' of practice affect the division of labour for providing PL learning in school.

Previous guidelines provided clearer PLs policy for the curricular time to be devoted to the subject.

> 'A minimum of 60 minutes per week is needed for children to make progress, but this can be spread across the week. A 'little and often' approach is ideal as it enables children to recall languages and reinforce their understanding and skills at regular intervals.'
>
> (DfES, 2007:2)

By contrast, the current guidelines make no allusion to curricular time allocations. Thus the timetabling of PL provision affects class teachers' involvement within a division of labour, which is required for a little and often approach.

PLs as a curricular subject

Language learning is commonly expected to involve four skills, namely listening, speaking, reading and writing, which are distinguished as important skills within current (DfE 2014) and previous (DfES 2007) governmental guidelines for both primary and secondary language learning practice. However, the assumption within both guidelines that the four language skills are mutually supportive is questionable, given that children's cognitive development varies with age. An informed pedagogy is thus needed that takes into account pupils' cognitive development.

The advocating of presenting new vocabulary in simultaneously written and spoken forms underlies many of the (now archived) Qualifications and Curriculum Authority (QCA 2007) schemes of work and the Key Stage 2 Framework (DfES 2007). However, the assumed reciprocal support between those skills is not evidenced in policy for *first* language literacy skills. The national curriculum strongly endorses systematic phonics to accomplish literacy skills in the first language, English; frequent sessions of associating graphemes with phonemes precede pupils' attempts to decode written words. By contrast, policy documents do not advocate learning the PL phonics system at any stage of learning. The acceptance of the four skills' reciprocal support, a 'rule' arguably inherited from secondary school practice, is therefore questionable, particularly considering the possible interference between two orthographies using the same alphabetic code but different phonic rules such as French and English. A study (Blakemore and Frith 2005) of how the brain learns to read seems to endorse this possible interference. Faced with an alternative alphabetic coding, pupils may mispronounce phonemes, due to involuntarily applying L1 phonics. Opportunities for exploiting their temporarily heightened sensitivity to phonology (see a later section) may also be reduced.

The next section explores further which the relationship between the skills, particularly their relevance to PLs learning.

Language skills

The generic form of any modern language, its spoken form, is considered to be the phonological coding of experienced events (Tomasello 2003); this represents the theory of usage-based linguistics (explained further in a later section). Because this coding of experience usually takes place in the first language, there is a possibility that in learning a subsequent language, the learner resorts to translating the PL into the L1 (English) to access its meaning, rather than deducing it by experiencing the event concurrently with the new

spoken PL vocabulary. Repetitively established habits of processing language are difficult to change, as discussed within a later section on neurobiological findings. Therefore, to avoid forming such habits of translating, direct experiences mediated through the PL could be exploited. For example, teachers could manage their classroom using repetitive PL phrases for authentic communication, without resort to explaining meanings through the L1, English, effectively a process of translating.

For school language learning in England, the skills learned may be predicated on the timetabling of the subject. Hitherto within the domain of secondary schools, timetabled language sessions are commonly of 45 minutes or more, and commonly purport to involve all four language skills under the auspices of a language specialist. It is unlikely that oracy (speaking and listening) skills would be sustainable within this length of time. The recent Language Trends 2016 survey (Tinsley & Board 2016) reports an increase from 41% to 45% of *primary* schools drawing on specialist expertise, a native speaker or a member of staff with a degree in the language. These people may have expertise in subject knowledge but may lack pedagogical knowledge for supporting the learning of oracy skills. Teachers themselves acknowledge the need for further support for teaching speaking skills. In a study of languages teachers' opinions in England,

> 'Of the four language skills, the one that our teachers felt there was most need for research to illuminate was speaking' (Macaro, 2003: 6).

The danger is that learning may be predominantly of literacy skills, as procedural skills like speaking and listening not only need frequent exposure and practice, but a teacher confident in supporting those skills. The Language Trends (2016) findings would provide greater insight were they contextualised within the skills undertaken, the levels of learning, and the frequency of the sessions.

Further indications for the relationship between skills have emerged in neurobiological research. Listening and speaking are innate, hardwired in the brain whereas reading and writing take a long time to learn, the brain yet to evolve an innate aptitude for those skills (Blakemore and Frith 2005). Because neuroanatomy evidences different 'routes' or brain pathways when undertaking distinct language skills, transfer between oracy and literacy skills should not be assumed.

Language learning theories

The reportedly scant and disappointing outcomes of current PL practice demand a more considered, theoretically underpinned analysis of the situation. To that end, broad language learning theories are briefly discussed against relatively recently gained knowledge about how the young brain learns languages. This may then provide greater insight into the veracity of the 'rules' which inform teachers' beliefs and practice.

Repetitive mimicry, part of the primary school 'oral tradition', appears to follow a behaviourist tenet, which dominated language acquisition from the forties to the sixties, namely learning through habit formation (Skinner 1957). Repetition of spoken or written language was undertaken until execution was perfected. Because 'a behaviourist mode of instruction is easy for computers to do.' (Beatty, 2003: 36), much software is 'stuck in a behaviourist rut' (op.cit.).

The innatist position reacts against behaviourist theory, and is often associated with two theories. Firstly, Chomsky's (1959) notion of a language acquisition device (LAD) attempts to explain children's acquisition of complex language in the face of a poverty of input;, and secondly, their presumed ability to process any language's grammar (thus known as universal grammar (UG). The brain's ability 'to contain all and only the principles which are universal to all human languages' (Lightbown & Spada 1999) underlies a largely positivist view of language learning which is still in existence (White 2003). However,

> '. . research on the brain has found it very difficult to identify any areas or circuits that might constitute UG [universal grammar].' (Schuman et al. 2014:1/2)

It is now thought that many areas of the brain are employed in the complex task of language processing. Language may be considered to be essentially the symbolic mapping of experienced events, with grammar a derivative of that process. Contemporary developmental psychologists regard two sets of skills as paramount in language acquisition, namely intention-reading and pattern-finding (Tomasello, 2003).

> '. . . mature linguistic competence, then, is a structured inventory of constructions . . The implications of this new view of language for theories of language acquisition are truly revolutionary. . . it is possible that children's early language is largely item-based and yet they can still construct an adult-like set of grammatical constructions originating with these baby constructions . . . a much closer and more child-friendly target than previously believed. ' (Tomasello, 2003:6/7)

This has profound implications for PL learning. The item-based beginning stages suggested here do not preclude progression to mature linguistic competence, but imply that through intention-reading and pattern-finding, young learners can build a grammar if exposed to the language while experiencing the event upon which the language is mapped. This suggests that opportunities should be provided for such knowledge to be applied in authentic acts of communication. Thus within a usage-based linguistics approach, intention-reading and pattern-finding may propel language processing through contextualised acts of communication. This would avoid the possibility that learning schemes for beginner L2 learners may be 'too noun based' (Macaro, 2003a: 201).
Clearly, the level of language knowledge needed for teachers undertaking this role draws into question the staffing of such provision.

Current staffing of PLs provision

Class teachers' support in PL provision has not been the 'rule' for PL practice, hitherto. Indeed, 'improving the confidence of classroom teachers who teach languages' (Tinsley & Board 2016) is cited as one of four principle challenges reported by primary schools about their PL practice. With lack of time and budget to implement professional development of necessary skills (op.cit.), challenges remain for instigating this kind of approach, particularly class teachers' capacity for such a role. Pupils' motivation may also be an issue: because experiences have been encoded previously in the first language (L1), the motivation to encode them into a further language may be reduced. This may be particularly true for native English speakers struggling for opportunities to exercise their spoken modern language skills;

with English as the 'lingua franca' of world trade and culture, speakers of other languages may be more assertive in practising speaking English.
While only 35% of primary schools employ specialists, 42% rely on outside support to monitor and develop PL teaching: 23% do not have access to specialist expertise (Tinsley & Board 2016: 62). While literacy skills may be learned without recourse to the PL's phonology, oracy skills necessarily require some form of verbalisation which may be particularly challenging for a non-specialist. This suggests a considerable deficit of expertise to support children's learning to *speak* a language. However, as usage-based linguistics theory suggests prescriptive item-based beginnings, teachers may be supported in learning to articulate these phrases, especially when supported by technology-mediated 'tools' (Phillips 2016). Teachers and pupils may thus progress in their language use at a similar rate.
Greater insights can be drawn from findings from neurobiological research, briefly discussed in the next section.

Neurobiological implications for language learning:
The innate characteristics of the human brain are taken into account not only to avoid being '25 years behind the times' (Schumann et al 2014: 179) but also to better understand the processes involved in early language learning. 'The need to draw more links between the neurobiological mechanisms and second language acquisition.' (Ellis 2002: xi) is considered paramount for any study of these learning *processes*. This is because 'psychological models must be answerable to their neuroanatomy and neurophysiology' (op.cit.). To further problematise PL practice in England, this section explores some of the aspects of the brain and how it learns languages.

Brain plasticity

Brain plasticity implies that the brain is architected on the activities it undertakes.

> 'There are intrinsic forces that contribute substantially to brain development, probably providing more than just a scaffolding for cognitive development, in the sense that they can also shape the directions in which further development can occur.' (Greenough & Black (2013: 155)

Thus the undertaking of activities also provides a predilection for future activities due to the synaptic connections that have been made. This implies that teacher trainees' learning of a modern language at secondary school informs the skills and approach for later learning, possibly as a primary school class teacher supporting PL learning. (A further important process involved in brain plasticity, is synaptic 'pruning', discussed in a later paragraph.) Due to brain plasticity, learning activities planned by a teacher affect later learning, not only in the progression normally understood of learning, but in the sense that bad 'habits' may be picked up which inform the brain's architecture for later learning.

A recent study using MRI scans of 22 monolinguals and 66 bilinguals allowed researchers to study the brain's structures of monolinguals and those for learning an L2 at different stages: simultaneously with the L1; after proficiency in the L1, in early childhood; in late childhood; or later (Klein et al. 2014). They found that 'learning a second language after gaining proficiency in the first language modifies brain structure in an age-dependent manner

whereas simultaneous acquisition of two languages has no additional effect on brain development' (op.cit.: 20). This would suggest that learning a PL through authentic experienced events such as those described within theoretical accounts above, involves the same brain mechanism as when acquiring the first language. The question of age-dependency has particular significance for PLs.

Plasticity and learner age

While lack of distinction of learning *processes* may result in varying findings of the significance of learners' age, a neurobiological stance is more difficult to refute.

> 'Evolution has designed the brain to acquire grammar and phonology by about four years of age through natural interaction with others. Some margin of heightened adaptability probably extends this learning period to the middle of the second decade of life. Once that period has passed, the brain can be viewed as 'damaged' with respect to the skill to be acquired.'
>
> (Schumann, 1998: 38)

For pupils, the claimed age-sensitivity for acquiring grammar and phonology could be harnessed in the classroom by exposing them to authentic spoken language in experienced contexts. However, as previously discussed, this requires teacher confidence in relevant skills. If on the other hand, the teacher is learning alongside their pupils, the potential disparity between teachers' and pupils' language distinct learning aptitudes may become an issue. Also, the temporary nature of children's heightened sensitivity to phonology advises its harnessing at the appropriate stage. While PLs are currently statutory from age seven, this is three years after Schumann's suggested peak age (op.cit.).

Kuhl's (2010) identification of the native language in utero prompted the claim that 'exposure to language in the first year of life influences the brain's neural circuitry before infants speak their first word.' There is also the suggestion that a goal of future research 'will be to document the "opening" and "closing" of critical periods for all levels of language and understand how they overlap and why they differ.' 'Vocabulary development "explodes" at 18 months of age, but does not appear to be as restricted by age as other aspects of language learning—one can learn new vocabulary items at any age' (op.cit.). This suggests that vocabulary learning might underlie language learning through any school key stage. However, the way that this learning takes place may not harness the phonological sensitivity that wanes through the primary school years.

Equally relevant in considering language learning and degrees of age-dependency for its different aspects is 'the machinery of synaptic pruning' (Takesian & Hensch 2013:7), when circuits are pruned, even to the extent of becoming redundant, after early experience during a critical period. So despite the brain's potential to increase its synaptic pathways, learning can be affected by 'brake-like factors' (op.cit:. 23), a realisation that effectively dismisses 'the traditional view of a fixed, immutable circuitry that is consolidated early in life.' (op.cit.:23). While language learning activities shape the brain's architecture by strengthening synaptic pathways, where some activities take precedence over others, underused pathways may be pruned. This calls into question the supposition that skills are interdependent and

reciprocally supportive of each other. It suggests that where literacy skills may be undertaken for the majority of a session, they may affect oracy skills. The assumption of reciprocal support between language skills is therefore questionable.

Difficulties in changing wrongly learned 'habits' or repeated procedures give a further warning and advise that pedagogical approaches require careful consideration. Habits learned through 'repetition . . are resistant to alteration or suppression; they function independently of executive control, and are cognitively impenetrable.' (Lee 2014: 67/8)
Blakemore and Frith (2005) cite the clever design of Stewart's study which uses musical notation as an analogy for orthography. It alludes to the 'brainwashing' effect of learning to read which cannot be undone, or unlearnt. Thus when learning to read another language, previously learned processing habits are difficult to change because the 'lasting impact' of reading on the brain becomes 'automatic and involuntary' (Blakemore and Frith 2005: 71). If the phonics processing of the first language is involuntary, the likelihood is that decoding mechanisms for the phonemes of the first will be redeployed for decoding the second language. Furthermore, such reliance on orthographic codes affects comprehension (Nasir & Ostry 2009). The danger is, then, that due to the automaticity gained through thorough learning of the phonics of the first language, pronunciation of the second is likely to suffer when reading it. This is turn may cause detriment to the learner's understanding.

A recent study's premise that PL learning should better prepare pupils for subsequent secondary school ML learning (Nuffield 2014) reported a predominance in current PL practice of oracy over literacy skills, the latter requiring further development. It could be argued, therefore, that due to the phenomenon of synaptic pruning, oracy may tend to relegate literacy skills, and that therefore they should be learned concurrently, to avoid the risk of such pruning. However, reading and writing skills involve a coded orthographic form of the generic phonological form. This suggests that the generic phonological form should be learned *in advance of* its coded orthographic form, if to avoid interference of the L1 phonics in decoding the PL. The point at which its written form is introduced must depend on pupils' automaticity in speaking the sounds. As indicated previously, the most commonly learned PL is French (Tinsley & Board 2016), which shares the same alphabet as English, so pupils' decoding of the same alphabetic symbols within different phonic combinations of each language may cause confusion.

Given the 'automatic and involuntary' nature of 'previously learned processing habits' (Blakemore & Frith 2005), teachers are equally susceptible to the influences of previous language learning. Given primary teachers' low confidence in their modern language skills, the likely short period of time that they studied MFL at secondary school, and the relatively recent introduction of statutory PLs, trainees' and teachers' are likely to need to improve their skills which are, in turn, influenced by their previous language learning experiences. Thus, a 'watered down' version of secondary practice (Briggs et al. 2008) is likely to be perpetrated, particularly if governmental directive, or feedback from OfSTED advocate little change in PL practice.

The social nature of learning language

A further distinctive feature of PL learning, as compared to that of other subjects, is its social nature. Pupils' ability to acquire language social behavior has been linked to their social

behavior, which requires other interacting human beings (Maye et al, 2002; Saffran et al 1996; Kuhl et al, 2003). Thus while a focus on oracy skills is neurobiologically justifiable, due to young learners' aptitudes (Schumann 1998), the provision of a language role model and counterpart to demonstrate meaningful communication would appear to be paramount. These factors therefore demonstrate the need for some kind of 'community' in which PL practice takes place. This may even include linking with native PL speakers (Phillips 2010).

Conclusion

This study based its analysis of PL practice and policy on a framework suggested by Activity Theory, which takes into account diverse factors within a collaborative activity, in which learning and doing are inseparable. The current situation of PL practice in England shows that while the recently endowed statutory status of the subject places it officially within the curriculum, patchy practice suggests a lack of understanding of the interconnectedness of multiple contributory factors in the learning environment. For example, class teachers' involvement is necessary to support the 'little and often' learning of procedural skills associated with speaking and listening to the language. Because young learners' sensitivity to the *phonology* of the PL is both heightened and temporary, it should be harnessed at this important stage.

Neurobiological findings reposition learning theories, for example, in claiming that the peak age for pupils' heightened sensitivity to language phonology is four years old. However, pupils' statutory learning commences three years later, aged seven, at the beginning of key stage 2. While the possibility is suggested of a sensitive period for other language skills, which thus constitutes a field ripe for research, vocabulary learning stays constant with no particular age-dependency. This provides a possible explanation for the widespread adoption of such an approach. While current practice is said to focus on speaking more than other skills, timetabling of PL sessions within PPA time may result in a heavier reliance on literacy skills than is currently reported.

The 'tools' or artefacts schematized at the top of the Activity Theory triangle should exploit children's innate sensitivity to phonology. Some theorists' call for greater focus on literacy skills, including the Nuffield study's, may threaten the harnessing of natural abilities for oracy skills by limiting timetabling presently available.

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