

Key points summarising the findings of the report

- Why would learners, teachers or educators consider using yet another technology facility?
- Teachers and educators are concerned with supporting wide and deep levels of understanding, but recognise the need for understanding to be based on appropriate levels of memorisation of facts, ideas or events, rather than just on processes concerned with the more fluid aspects of application
- The software facility considered in this research study, phase-6, focuses on supporting memorisation, through retrieval and recall practice. This technology is worthy of consideration, therefore, by teachers or educators concerned with supporting long-term memorisation
- A research team at Lancaster University in the UK have recently undertaken some preliminary studies that have looked at uses and impacts of phase-6
- Prior to the development of this software, pupils in mainland Europe used boxes, divided into five spaces, to support revision and memorisation of words and phrases. phase-6 adapts this concept, changing the space or distance perspective into a time perspective
- Considerable recent research in the US and the UK has looked at the benefits that can arise from appropriate uses of spacing retrieval practice. Expanding retrieval practice has been shown to be effective in many situations, not only for students, but also for normal adults, pre-school and older children, and the elderly
- Although appropriate spacing is always beneficial for long term learning, the use of increasing space intervals to support more effective retrieval and practice has been shown to be successful in some, but not necessarily in all, cases explored
- Two preliminary studies looking at uses and impacts of phase-6 in schools have been undertaken by the research team
- 172 students in a school in California used phase-6 to support their learning of Spanish language vocabulary
- An analysis of test results indicated positive impact, both at the level of improved performance, and of improved prediction of performance. However, it was not possible to draw a firm conclusion that the differences in performance identified were due to phase-6 alone. Further data about the comparative difficulty levels of the two sets of words would have been needed to eliminate alternative explanations
- 230 pupils were involved in the study across three schools in Germany. All pupils were in class 5 (10 to 11 years of age)
- Pupils who had used phase-6 in their previous primary schools saw it as helpful and tended to use it again. For phase-6, pupils' good intentions at the beginning of the year corresponded significantly with a greater likelihood of them actually using phase-6 during the year
- Girls translated significantly more of the items correctly from Paper 1 than did boys. However, the effect of gender was not significant at the end of the test period
- Pupils were significantly better at receptive translations than productive ones in both papers. This result indicates that the balance of receptive and productive vocabulary within practice lists should be considered carefully
- Pupils translated items correctly significantly more often when a sentence was present for context than when it was not. This result indicates that sentence contexts for questions within vocabulary training packages should be considered carefully when phase-6 is used
- Evidence from one school indicated that a wide variety of different retrieval and practice approaches were adopted by pupils, but that the most common were concerned with using word lists in textbooks (with someone testing this list or it being written out in a vocabulary book). The emphasis here is on the testing of vocabulary within short time periods. phase-6

uses an increasing time interval and is concerned with long-term memorisation. Teachers and pupils have focused in this school more on the adoption of short-term approaches. If pupils are to memorise effectively, to meet the needs of both short and long term learning, it is likely to be important that both forms of practice are introduced and balanced

- Two analyses run at a specific school level suggest that phase-6 is supporting certain groups of pupils. In one school, girls who gained high marks in Paper 1 gained marks that were well above the average in Paper 2 when they also used phase-6. It is possible that pupils who score high marks use techniques that do not involve high levels of social interaction. Hence, use of phase-6 can match the approaches to learning taken by this group of pupils. Their independent and persistent use of phase-6 could allow them to explore vocabulary learning so that they can gain higher marks than their peers who use phase-6 less persistently
- In another school, pupils who used phase-6 daily gained higher test scores, when translating nouns, adjectives, prepositions and connectives in sentence contexts in a receptive direction, at levels of statistical significance when compared to those using phase-6 less regularly
- The time interval between phases can be set to match an individual's initial level of understanding of subject content, and approaches to learning and memorisation. Teachers should consider how time intervals between phases might support their groups of learners most effectively, perhaps suggesting time intervals based on the notion of fast learners, medium paced learners, and learners who take more time in their learning
- A key aim of the research was to explore how investigations might effectively identify impacts on learning, to draw conclusions that would offer recommendations for robust future studies
- From a research point of view, phase-6 provides an opportunity to set up focused research studies, since the resource offers support in quite specific areas of learning (in the areas of memorisation, retrieval and practice)
- It is clear from findings of the studies reported here that teacher approaches can dramatically influence impacts of the phase-6 resources
- A future study will need to gather both qualitative and quantitative evidence. These forms of evidence will allow levels of impact to be quantified, as well as reasons sought to explain why differences arise