Issues in developing programmes to support teachers of philology in using ICT in Greek schools: a case study.

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Background

The introduction of computers in classrooms has been a core innovation in many countries in recent years. ICT can make a contribution to learning (in the UK see, for example, Somekh at al, 2006; Harrison et al., 2002; Cox et al., 2003 in a long line of British Educational Communications and Technology Agency (BECTA) supported research). However the rationale for the use of ICT has often been incoherent and lacking a clear curriculum focus (again in UK, for instance, Reynolds et al., 2003, Watson, 2001; Selwyn, 1999 and see Vavouraki, 2004 for a Greek perspective). Further, there has been uncertainty over the role of ICT as a subject in its own right and the teaching of IT within the school curriculum (see, for example, Eraut, 1991 for an early but still relevant exploration of issues at a European level). Given this background it is not surprising that there have been many types of in-service training programmes to support teachers in using ICT in subject teaching. For example, in UK, the New Opportunities Fund supported training sought to ensure that all teachers were able to develop ICT in their teaching, but with mixed results (Galanouli, Murphy and Gardner, 2004; Office for Standards in Education (OFSTED) 2001, 2004). Meanwhile smaller programmes have been reported in this journal and elsewhere (e.g. Webb et al., 2005). Turning to Greece, ICT has been promoted in schools but not in a systematic manner. During the 1980s the Greek Ministry of Education introduced IT (the term IT is used in this paper to refer to the subject in Greek schools and ICT to refer to technology used in a cross curricular context) as a stand alone subject in unified upper secondary schools and introduced computer literacy courses in all lower secondary schools (Makrakis, 1997). Greek schools, however, continued to make less use of ICT than other educational systems (Plomp and Pelgrum, 1991) and three training programmes were designed and implemented.

The first, the 'Odysseia-Hellenic Schools in the Information Society Programme' was launched by the Ministry of Education in 1996 and ran until 2001 (see Kynigos, 2002; Vavouraki, 2004). This programme was designed by the Academic Research Institute on Computer Technology (CTI), an independent academic research and development Institute. 15 teachers volunteered to participate in the project in 1999 and become teacher-trainers. Selection was based on the length of teaching experience, sensitivity towards the contribution of ICT to teaching, and a positive attitude towards implementing computers into school teaching and learning. The following year a further 90 teachers joined the programme. These teachers were trained at a post-graduate level for one year in three training centres overseen by three Universities. The main aim of the training was to enable these teachers to educate colleagues in the use of ICT for teaching and learning in their respective specialisms and indeed training was widespread (Kontakides and Kaskandami, 2004). An education portal (published at www.e-yliko.gr) was created which helped support the programme and included suggestions for lessons supported by ICT.

The second major programme for supporting ICT in Greek schools was the 'Preparing Teachers of the Information Society Programme', a project organized by the Ministry of Education with the support of the Pedagogical Institute and the CTI. It was carried out in Training Support Centres (TSC). This programme started in January 2001 and it was expected that, by the end of 2003, 75,000 teachers would be provided with ICT in-service training. This training programme was structured on three levels. However, only Level 1 (training in generic ICT skills), and not the latter programmes which explored ICT across the curriculum, was put in practice. In-service training was organised at a local level, with decisions over the time of training, the methods employed and the provider used being made by the schools (Papadopoulos *et al*., 2001, Drenoyianni, 2002; Greek Ministry of Education, 2000).

The third programme carried out in the academic year 2001-2002 was 'Endoscholiki Epimorfosi' (EE), which operated through the Ministry of Education. Here teacher-trainers, colleagues who had attended the earlier Odyesseia programme, were to provide training to the teachers in their own school and other neighbouring schools. To do this each teacher-trainer was asked to create groups consisting of 10-12 teachers based on a shared specialism and willingness to participate. The training events were held in the computer suite in one of the schools outside school hours once a week. The content of the programme was defined by a special Committee of the Ministry of Education within a broad Framework of ICT Training Programme (Dapontes and Kontakides, 2001, Kontakides and Kaskandami, 2004). Teachers

were expected to learn to use ICT in their teaching, in particular to organise two teaching sessions with pupils, using the computer suites in their schools, with the assistance of their teacher-trainer (Kontakides and Kaskandami, 2004). It is this third programme, the Endoscholiki Epimorfosi, which was the subject of the research reported here.

While the main goal of the EE training programme was to enable teachers to introduce ICT into their teaching it was expected that the training sessions would enable reflection on principles of teaching and learning. Tainers were expected to underline the importance of cooperative learning, the role of the teacher as a mediator to knowledge, an interdisciplinary approach to teaching and the acquisition of knowledge by the pupils themselves (Dapontes and Kontakidis, 2001). The sessions covered both subject specific and general purpose software. The former included tools such as an interactive historical atlas and a simulation programme to support history teaching and a tutorial programme to support lessons in ancient Greek. These were to be shown alongside several subject related web resources. Meanwhile, the major general purpose packages, such as word processors, presentation software and spreadsheets, were to be taught in relevant contexts, for example, the word processor to design worksheets for pupils and presentation software to introduce a lesson.

The wider context in which curriculum change was to take place

The EE programme was to take place within an education system often described as particularly centralist and bureaucratic (Zambeta, 2002). In Greece all important decisions are formulated and taken by the central government, through the Ministry of Education and its departments (Ifanti, 1995). Educational planning has often been seen as short sighted and with limited follow-through so that a new government, and a new minister within the same government, will initiate educational reforms at the same time cancelling reforms previously introduced. The result is that schools have little time for consolidating change or investing in changes which may be short lived.

Greek schools are further held back by relatively low levels of expenditure on education and reliance on European Union support (Kynigos, 2003; Pulpanova, 2006, Vavouraki, 2004). In the case of ICT this means that schools lack the infrastructure which enables ICT to be used. As a further constraint on change, the Greek education system lacks a tradition of teacher education and professional development. Only in 1997 national examinations for the appointing of teachers to state schools in Greece

were set up. While the framework for primary training is much more developed, secondary teachers have not traditionally carried out a significant programme of mentoring and training let alone pedagogical training in the use of ICT. Within secondary schools there is little institutional pressure on teachers to innovate. The Ministry of Education, the Heads of the Prefectures of Education, the School Advisors and the Head-teachers of schools could exercise this pressure but rarely do so. Some recent attempts have been made to address teacher CPD but this has given rise to difficulties again, in part, associated with the centralised nature of the Greek education system (Gravani and John, 2005*)* The lack of a clear system of assessing and rewarding teachers' performance lessens the incentive to innovate and leaves teachers with a voluntarist approach to their own development.

Methodology

The research explored the perspectives on the way the EE programme was planned and implemented, and its effectiveness and impact at a personal and school level. This was a case study looking in depth at the issues associated with developing ICT in Greek schools, not an evaluation of the nationwide programme. The study was limited for reasons of time and resource to considering participants in a single geographical area. In this area there were nearly one hundred philology teachers (teachers who teach Ancient and Modern Greek Language and Literature, History, Latin, Citizenship) who worked in 56 different secondary schools (both lower and upper i.e. post compulsory). The training was provided by three teacher-trainers and took place in the IT suites of six schools for a full academic year, three hours a week from 2002 to 2003. A random sample of 34 of the 99 teachers was constructed, these teachers were based in 15 schools, some working in the same school as other participants, others on their own. The teachers were approached and agreed to take part in the study. During this first visit the aims of the research were explained and a questionnaire was left for teachers to complete. At a second visit the questionnaire was collected, ensuring a 100 per cent return rate, and an interview carried out. These visits took place during the academic year 2003 – 2004 which meant that most of the research was carried out after the training had finished. The questionnaire given to the teachers contained 55 short questions, a mix of Likert scale and tick box questions, covering attitudes to ICT in school, use of computers in school, satisfaction with the training and the impact of the training. The interviews were semi-structured and

covered similar themes to the questionnaire but in much greater depth. In addition all three teacher trainers were interviewed. The headteachers in all 15 schools were approached and nine were willing to be interviewed. Finally, three colleagues (two with roles in the Ministry of Education and one from a Greek University) who were involved in planning the programme also agreed to be interviewed. All interviews covered similar themes but were adjusted to the role of the participant, for example head teachers did not have first hand knowledge of the sessions but were asked about their awareness of the programme and its impact on their school and teacher-trainers knew less about the planning of the programme at ministry level but could say much more about the particular training events they led. The interviews lasted from 30 to 90 minutes. All the interviews were transcribed and coded around themes 27 themes. Ethical guidelines were followed and the consent of informants gained.

The research framework enabled a triangulated perspective on the programme within and between different groups of respondents. For example, it was soon discovered that nearly all teachers had not carried out lessons using ICT once the training had finished and indeed only minority (nine) had carried out a lesson with pupils supported by the teacher trainer while attending the programme. There were several reported reasons for this, more of which are discussed later. However, one constraint on teachers was, not surprisingly, lack of time. The research approach meant that different perspectives on time could be explored by tracking data sources and methods. First, the questionnaire data showed that most teachers (22) believed there was not enough time to use ICT in their classes with only a few (seven) disagreeing and five others not sure or not responding to this question.

Insert figure 1 about here

Responses to time were then tracked within the interview data. Some teachers felt there was not enough time to practise skills learnt during the training and these skills had simply been forgotten once the training was over. For several teachers the training had gone too quickly, as one put it:

As people of a certain age (28 of the teachers were older than 40) we needed more time, in order to assimilate new things, especially when these are related to technology. (teacher lower school).

Other teachers saw lack of time as product of intensive working conditions: "'you just can't give even two hours' to sit down and plan something new," (teacher lower school) , while others were more self critical and accepted they had neglected to find the time to plan for the use of ICT. Common to nearly all teachers was an awareness that the opportunities presented by ICT did not fit into a curriculum which was heavily prescribed and bounded by set texts.

If there was an hour in the weekly timetable in which we could go outside the set curriculum and I could use word processing or language exercises at the computer I would do it but there is not... (teacher upper school).

These themes were taken up by teacher trainers, head teachers as well as programme designers, albeit there were some shifts in perspective amongst these different groups. For example, programme designers tended to be more conscious of the national context in which teachers were working and teacher-trainers were more aware of what schools, in particular headteachers, could have done to support the teachers. Some of the headteachers were quite fatalistic about the difficulty of reforming the curriculum:

If I have a certain curriculum and the parents and the pupils want to succeed at university entrance, they won't listen to me if I said I am introducing ICT in order to carry long-term curriculum reform…. We need more time (to use ICT), a different curriculum and a different system of exams. Without that there is not a lot we can do.

(Head-teacher upper school)

The research approach enabled the researchers to reach a credible description of the constraints on teachers and how these constraints were perceived by other stake holders. In the above example there was a large degree of agreement between all groups that time was a key, but by no means sole, factor when considering the impact of the programme.

Findings

In total the study generated 69 main findings which were collated into five major themes reflecting the chronological sequence of the programme. These themes were: (i) the planning of the programme (ii) the planning of the sessions (iii) the implementation of the programme (iv) the impact of the programme and (v) the evaluation of the programme. The perspectives of each group of participants on each finding were collated onto a matrix for easy comparison. Note, however, if only a few

respondents put forward a particular perspective this does not imply that the majority of the group disagreed, such disagreement could only be shown by cross checking against the numbers who positively agreed with a contrary statement. The table is too large to be included in full but an extract is provided (table 1).

Insert table 1 about here

Using this table a summary of the main findings follows. These are based on perspectives held by most of the teachers or trainers or headteachers or programme designers and, where indicated, perspectives held across two or more groups.

Planning the programme

The programme designers felt that the decentralised form of organisation of the training was ineffective because teachers and trainers were not used to working in that way. The teacher-trainers appreciated the decentralised nature of the form and delivery of the programme but they wanted, and needed, more central support in provision of material and on going training. An additional factor impairing planning was the co-existence of two ICT training programmes at the same time (i.e. training carried out within training support centres as well as the EE programme) an issue which was not addressed adequately. Difficulties in planning the sessions for after school were not considered in depth.

Planning of the sessions

The programme designers considered that the teacher-trainers had been sufficiently prepared for the training but the teacher-trainers, themselves, and the teachers too felt this was not the case. In particular teacher-trainers lacked knowledge of ICT in particular areas of subject teaching and this meant they could not plan to adequately address the teachers' diverse subject backgrounds. Teachers differed in their ICT knowledge and skills and in the type of school in which they were serving, the lessons they were teaching and their motivation for participating in the training. The teacher-trainers felt that they did their best to plan to address the differentiated IT needs of the teachers, but teachers felt this had not been done appropriately. The co-operation between head-teachers, teacher-trainers and IT specialist teachers in schools had not been pre-planned and this caused considerable difficulties when carrying out the training. All agreed that teachers did not have a clear idea of the aims of the programme in advance. They were no incentives planned beyond a certificate of attendance to support and encourage teachers in their development of ICT in school.

Carrying out of the programme

There was agreement, in particular, between trainers and teachers that attending sessions after school was not satisfactory and between all groups of respondents that the training did not last long enough to cover the material. There was further agreement that, despite the formal aims of the programme, there were too few examples of ICT use in relevant teaching and learning contexts. Indeed some teachers felt that the training was meant to focus on developing their IT skills, rather than their use of ICT in teaching, a point also recognised by the trainers. Most teachers felt there had been too little 'hands-on' activity and too much theoretical discussion of the use of ICT in teaching. There was little modelling of the use of ICT in subject teaching and teachers, for the most part, felt they needed to go into classes to see teachers using ICT and this had not happened to the required extent. Most teachers felt that subject needs were not being met. The software which had been demonstrated during the programme was not seen as appropriate for particular classes. Teacher-trainers and programme-designers had a more positive view of the E-yliko web site but many of the teachers had rarely accessed it and spoke of technical problems when gaining access to web-resources. Trainers and teachers were aware of heterogeneity within the group: teachers taught different subjects within the general discipline of philology; they taught at different levels; they came with different levels of IT skills. Trainers and teachers were aware that differentiation within the group was not adequately addressed within the sessions, with many feeling that it could not be as the groups were too diverse.

During the programme only nine out of 34 teachers tried out lessons in their own school, supported by the teacher trainer. A shared explanation for not using ICT was lack of time. As seen earlier, this covered lack of time to gain confidence in using ICT, time needed for planning, the pressure of the teaching workload and the demands of an inflexible curriculum. Lack of curriculum time was particularly acute for teachers of 'exam classes' - those preparing pupils for university entrance.

A further key point made by many teachers were the limited opportunities for access to the IT suite in their school. The specialist IT teachers occupied these suites nearly all the time and rarely came forward to organise access for other teachers.

The issue of pressure and support was mentioned by all the participants. There was little pressure on teachers to use ICT. There were no existing policies or expectations on teachers to use ICT and head teachers only had limited knowledge of the programme. Most headteachers had not monitored or even felt they could encourage teachers in their use of ICT as this fell outside their remit. Teachers felt that there had been little interest in the programme in school though headteachers countered they would have been interested if approached. The teacher-

trainers did not feel supported in their work by the schools or at wider level by the Ministry of Education in carrying out their work.

The impact of the programme

Teachers with no previous knowledge of IT appreciated that through the programme they had developed greater IT skills. All teachers felt they had more understanding of how ICT could support subject teaching and most were positive about its use, though teacher-trainers felt the teachers had not grasped the importance of cooperative teaching methods or other ways in which ICT could support changes in pedagogy. Taking a broader view, programme designers and head teachers doubted whether the programme could impact on pedagogy. Teachers themselves felt that ICT had more value for helping pupils revise for tests or exams and that the main value of ICT was that it could help motivate pupils. Most agreed that in the supported teaching sessions ICT had offered an embellishment to traditional ways of teaching, not a radical change in delivery or outcome. Teachers were keen to acknowledge that their teaching could be effective without ICT and teachers could not be replaced by computers.

All but two teachers had not used ICT in the year following their training and teachers put forward many reasons why this was the case. Constraints continued to include the inflexibility of the curriculum, lack of time, and access to the IT suite. Even when granted access, transferring pupils to the IT suite was disruptive for teachers and many felt that they needed computers in their teaching rooms along with easily accessible technical support. Teacher-trainers were more inclined to see pedagogy as a key issue and felt that ICT suited co-operative learning approaches, but these were approaches which teachers were reluctant to undertake. The key factor that differentiated the two teachers who had used ICT was their willingness to experiment and their concern to address motivation of their pupils. They felt ICT offered something different which would help engage pupils. One of the teachers prepared lessons around electronic resources she had found, while the other teacher re-worked the lesson she had led with the support of the teacher-trainer during the training programme itself. There were no obvious special circumstances concerning these teachers, they too experienced similar difficulties as other teachers and felt that lack of time was a serious factor that impacted on their use of ICT.

A network of difficulties

The findings from this study were summarised in four main statements about the programme:

the programme was not planned appropriately

the sessions were not planned appropriately

there were difficulties in teaching the sessions

there were differentiated but disappointing outcomes

These findings were interrelated and led in a chronological sequence to the 'disappointing' outcome. After identifying these four phenomena the data was cross checked and re-examined to construct a visual representation, in the form of a concept map, a graphical tool 'for organizing and representing knowledge' (Novak and Canas, 2006). This map shows how the difficulties were interlinked, each arrow showing an association made by the participants, and that they could only be addressed by through the co-operation of all stakeholders. These difficulties clustered around the diversity of the group and the problem of differentiation; lack of time including curriculum constraint; lack of cooperation between key stakeholders; teachers' uncertain IT skills and difficulties of access to IT resources.

Insert figure 2 about here

Discussion

This case study adds to the research, carried out in many contexts about the barriers on introducing ICT into the curriculum and the constraints on teachers being urged to use ICT (e.g.Jones, 2004). ICT brings an extra layer of complexity to curriculum reform in that schools are required to provide teachers with access to equipment and to maintain and up date this equipment (Pelgrum, 2001). It takes time for teachers to develop confidence with using ICT and they may at first become focused on developing IT skills (Snoeyink and Ertmer, 2001). Much time is needed before teachers use the affordances of ICT to change styles and practice (Veen, 1993).

The introduction of IT skills requires close attention; what seems to work is an alternating focus between mastery of a skill or procedure and the purpose to which the skill may be put. This alternating focus however is rarely achieved either because of excessive focus on skills (as in comments regarding NOF training e.g. OFSTED 2004) or, less frequently reported, excessive focus on pedagogy. Training within the EE programme seemed to suffer on both accounts with a further complication being a lack of differentiation so that some teachers lacked the basic IT skills to follow

demonstrations of software while introduction of general purpose packages was repetitive and frustrating for others. This again has echoes in the reporting of NOF training in UK.

Relatively few teachers find ICT a tool they can easily integrate into their teaching styles (Becker, 2000) and for many collaborative professional development within an individual school may be a necessary precursor to ICT use in the classroom (Becker and Riel, 2000, OFSTED 2004). Teachers, as in this study, often find ICT a disruptive technology as it may require pupils to shift location, it may change pupils' expectations and it may not 'fit' an existing curriculum (Cuban, 1993, Cuban et al. 2001). Despite these difficulties many teachers and other stakeholders in education, remain positive about the use of ICT and see its adoption as important for curriculum renewal. Again something confirmed here.

The study adds to the more general literature on teacher development and in-service training by showing the importance of introducing change based on a diagnosis of a school's needs and an understanding of a particular school's culture (Steadman et al., 1995; Craft, 1996); of planning for the engagement of all teachers in the proposed changes (Harris, 2002; Fullan, 1991; Hargreaves, 1994); and of the importance of school leadership (e.g. Hallinger and Heck, 2002; Jackson, 2000). Teachers are more likely to take on change in schools which develop collaborative learning approaches (Lieberman 1995, Mitchell and Sackney, 2000) and teachers need sufficient time to develop their teaching (Day, 1999).

However, in trying to understand the lack of impact of the programme on these particular teachers it is important to look beyond a checklist of what was missing and consider the wider context in which change was expected to take place. Here, the three key characteristics of the Greek system, discussed earlier, stand out: its highly centralised nature, its comparative under resourcing and the lack of a tradition in teacher centred professional development in secondary schools. Each constrained the EE programme.

Regarding the first, the introduction of ICT into the Greek educational system followed the traditional top-down innovation approach (Samatas, 1995; Vavouraki, 2004) and meant that the programme was put forward without sufficient participation of teachers in its planning and in decision making. As a further complication its

introduction overlapped with another major in-service programme, neither of which was sustained.

Of course it could be argued that a high degree of flexibility was built into the programme in that teacher-trainers were free to select their groups and adapt their sessions to the needs and interests of their groups. There was scope within the programme to develop collaborative working within sessions and even communities of practice within schools. However, this did not happen within the case study and for it to happen there needed to be a level of centralised support and training which was not provided (compare this to the bottom up / top down perspective offered by Vivankos, 1997). The study provides an example of the 'letting go' of some elements of central control while holding on to an excessively tight control of the syllabus and examination system (Kynigos, 2003). Change was attempted in a context in which the 'good teacher' is the teacher who manages to help her/his pupils enter University through mastery of texts set by the Ministry (Katsikas and Therianos, 2004) leaving very little space for curriculum renewal including the use of ICT.

Regarding the second, schools lacked the infrastructure (for example up to date computers in teaching rooms and specialist technical support) which enables ICT to be used. Access to resources was as important as the extent of resources and again this was exceptionally difficult in school. As such the training programme was initiated without having secured a sufficient basis for its successful implementation.

As regards the third issue, support is closely related to the pressure, both are needed to develop curriculum reform (Fullan, 1991) and both were missing to a large extent in this study. For example, the lack of time, mentioned so often by teachers, becomes clearer in this context. After school Inset could be seen as an extra demand rather than an opportunity; time spent on curriculum innovation appears misplaced when faced with the expectations of pupils, parents and others for preparation of university entrance; procedures for organising collaboration with IT teachers threaten to be strained and time intensive. Time as ever is a subjective concept (Hargreaves, 1994) but notions of time are formed by social practices.

*Alternative scenario*s

Assessing the impact of any programme of inservice training raises the question of what could have been done differently. In this case the programme could have been

planned to give more time for teacher-trainers to attend to their own development and to meet more often to share ideas and model successful practice. The trainers could have sought to address differentiation more effectively and modelled the use of ICT in a curriculum context more frequently. They could have explained the goals of the programme more fully and made clearer contracts with teachers to use ICT. The teachers could have been more willing to experiment and tried harder to overcome obstacles to the use of ICT. The headteachers could have been proactive in organising access to resources at school and supported new approaches to professional development for their teachers. IT teachers could have offered their expertise to teachers and more flexible use could have been made of IT suites. However, it is doubtful whether this would have had anything other than a limited, short-term impact without a less centralised system in which innovation was valued and change was embraced.

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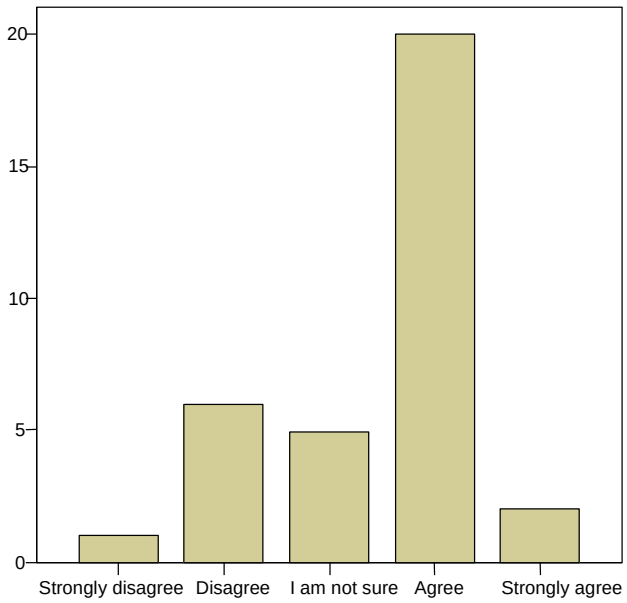

Figure 1: The proportion of teachers who thought that there was not enough time to use ICT

Theme: Carrying out the training / Perspective	Teachers	Head-teachers	Teacher-trainers	Designers of EE and TSC programmes
The training was not long enough	++++			+++++
There was little pressure for teachers to use ICT	++	++++	++++++	
There was little support for ICT integration on a school level		++	++++++	++++++
There was little support for the teacher-trainers			++++++	++++++
The head-teachers did not welcome the training			++++++	
Teachers and head-teachers had not discussed the training	+++++			
There was no reward for teachers who took up the training	++	+		+

Table 1: an extract from the role order matrix considering perspectives on the implementation of the training. The strength of agreement within each group is shown by the number of plus signs (for example a single + meant that >7% and <=20% of the group put forward a perspective; ++ that > 20% and <= 33% had and so on).

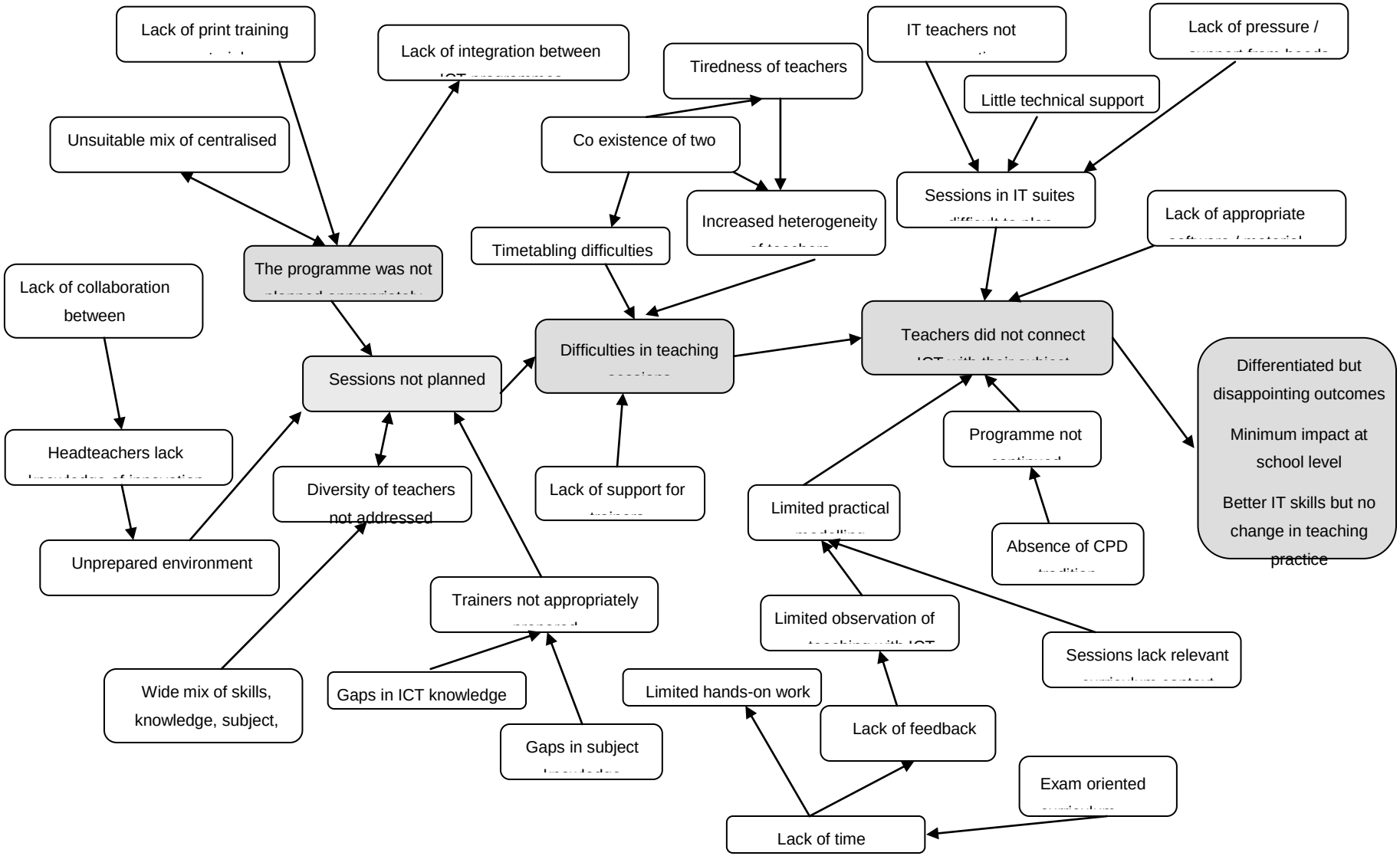

Figure 2: Interlinked difficulties within the programme