A Paradigm Shift in Promoting Effective ICT Pedagogy Integration in Classroom Teaching Through an in Service Training Course

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Citation

Abstract
The trainer during a course on ICT pedagogy, in an effort to promote efficiency and skills to the trainees, decided to intervene. He did not totally abide by the standard training procedures and course curriculum, but determined to alter the training modes and adopt certain initiatives based on the trainees’ learning profiles and knowledge level. The results proved positive. In the article it is argued that there is a need of alternative approaches to training on ICT pedagogy integration in classroom teaching. An effective training course expects being associated with the understanding of the needs, level of knowledge and educational context of the trainees as well as the selection and employment of selected instruction theories, tailored to the context, culture and specific emerging trainee-profiles.

1. Introduction

Digital Literacy is increasingly becoming an essential life and work skill. The inability to access and use Information and Communication Technologies (ICT henceforth) on an everyday basis has effectively become a barrier to social and professional integration as well as personal development. ICT, including computer applications, mobile technology and communication systems, seems to have become an important mean in teaching (Coates & Friedman, 2009) and teachers should acquire the skills to use this kind of technologies (Cuban, 2001).

Adoption and utilization of ICT in schools expects skilled teaching staff and visionary school leadership. Teachers and school leaders need to be knowledgeable about the potential that ICT portrays through teaching and learning scenarios in schools. Where this acknowledgement is lacking, policies planned by government and investments towards the implementation of ICT in schools, frequently fail to realise the desired school reforms and effective integration (Higgins & Moseley, 2011). It seems that the investment and planning for training ICT teachers is regarded as an additional cost rather than as an essential prerequisite for transforms in teaching and learning.

2. Literature Review

2.1. The Greek Training System

Regarding INSET courses in Greece, Sergis and Koutromanos (2013) argue that educational in-service training courses, in certain cases, did not succeed in promoting
understanding on ICT use in education due to lack of quality trainers and effective methods of training. This might be due to the system’s weakness of organizing and supporting certain projects and to the existence of a huge gap between theory and practice which, as a consequence, leads to the absence of practice in the educational field. Moreover, Hatzipanagiotou (2001), studying the Greek educational training policy framework, argues that it lacks a method since the planning of INSET courses is deprived of coordination and coherence. Further, he also states that training in Greece is distinguished by the rushed relocation of educational models and cognition from abroad and is unsupported by academic research on a local level. These courses also function away from teachers’ school environments and, as a result, restrict teachers’ involvement. The location of the course has to be considered; as this can reflect upon the transferability of newly acquired skills by teachers to classrooms (Granger et al., 2002) Training does not consider the teachers’ interests and worries nor take into account teachers’ ideas and propositions (Gountoura, 2002). Training courses are centrally designed in the Greek Ministry of Education without teachers’ participation and consequently do not apply to the real needs, knowledge and everyday problems of the serving teachers (Karalis & Vergidis & Katsiyanni, 2000). In addition, Dantis (2005) argues that training in Greece does not connect theory with local, in context research and practice. Hence, this presents a difficulty in linking training programs with teachers’ effective professional development. It seems that many issues and factors impact the effectiveness of a training course from the start or during the training period.

2.2. The Necessity of the Trainer’s Intervention in a Course

According to Anthopoulos and Daglis (1990), an effective training plan should focus on the everyday socio-educational reality of the school, provide solutions that will be accepted by the teachers in a framework of cooperation between teachers and training project developers, promote teachers’ cognition and cover contemporary educational needs. The design of training programs should take into account teachers’ real problems and consider previous training projects’ evaluation results. Therefore, it remains to the trainers’ will, competence and determination to identify and acknowledge any problems and issues that lurk and then emerge in a course. Accordingly the trainer should effectively deal with these issues by evaluating and adopt certain ways of overcoming them such as, flexible teaching styles connected to the specified learning profiles of the trainees as well as interfering into the courses structure and schedule of work in order to promote and produce effective outcomes.

3. The Context: The Training Course

The training course consisted of ninety six (96) hours spread over a period of six (6) months. The course started in September and ended in March. Each week, except public and school holidays, the participant teacher-trainees had to attend two sessions of three hours each, hosted in the training centre’s computer lab. The training centres are schools, mostly secondary education schools that fulfil the infrastructure requirements in hardware and software to host and run such a professional development course. The INSET course was separated into four (4) phases according to the topics taught and the activities, as introduced and assigned to the trainers by the relevant organizers, The Ministry of Education and the Institute of Educational Policy of Greece. Accordingly, the four phases of the course are:

<table>
<thead>
<tr>
<th>The Phases of the Training Course</th>
<th>The Theoretical Phase</th>
<th>The Practical Phase</th>
<th>The Applied Phase</th>
<th>The Evaluation, Selection and Implementation Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical issues on ICT pedagogy and Digital Literacy.</td>
<td>Individual work activities on various ICT tools. Design, creation and presentation of projects and discussion.</td>
<td>Promotion of applied knowledge and skills through the design and creation of educational scenarios with ICT pedagogy for in-class utilization.</td>
<td>Evaluation of the proper ICT tools and resources as well as the implemented and practiced educational scenarios for classroom instruction.</td>
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The particular course aimed to promote effective utilization of ICT pedagogy for in classroom instruction through a series of sessions on the theoretical issues of ICT pedagogy as well as the successful selection and use of specific ICT educational tools. Additionally during the last phases of the course the trainees had to design and create ICT scenarios that could be effectively implemented in class. There was a standard curriculum and certain exemplary activities that the trainees need to complete in the course. The syllabus was created and provided centrally by the organising bodies, MNER and IEP. However, in the course’s guidelines, there were no suggestions on proper instruction modes, for an effective training, nor any techniques for resolving problematic issues or situations that might arise during the course.

The specific course leads to certification through an exam system held by the organisers, where the participating teachers required to demonstrated adequate knowledge and skills on ICT pedagogy in classroom teaching throughout a multiple choice testing system and the design and creation of a realistic and satisfactory educational scenario on ICT pedagogy for in class implementation. The participating teacher-trainees were active teachers, working in primary schools in the city of Thessaloniki, Greece. As a prerequisite
to attend the specific professional development course, was that they should be active teachers and also hold the first level certification, in basic computer knowledge, through succeeding in the exams hosted by the previous training course, on basic computer skills, (MS Office and MS Windows) organised by the same bodies, (MNER and IEP). The teacher-trainees after applying on line for participation in the specific training course, through the main web portal of the project, were randomly selected to attend, via electronic draw. The researcher has been appointed, through his successful application, also by the organiser, to participate as a trainer in this project and city. This placement allowed him to proceed with in-depth investigations and also to have access to primary educators that will be involved in the project.

4. Methodology

The researcher-trainer attempted to acknowledge the effectiveness of the in-service training course by identifying and recording any actual changes in identities, attitudes, conceptions, knowledge and approaches of the teacher-trainees pedagogic use of ICT in classroom teaching. The researcher’s main concern in the study was to examine and understand the development and gaining of ICT pedagogic practices and competencies of twelve Greek primary school teachers. The researcher’s position was as an active observer and educational practitioner throughout the INSET course, both trying to evaluate the effectiveness of the specific course and identify any changes in teachers’ ICT pedagogic practices and competencies. Accordingly, aiming to evaluate the INSET course, the research questions set in the study are:

1. Which are the teachers’ profiles who are using ICT in classroom-based instruction?
   1a. Do teachers teach with the use of ICT?
   1b. If they teach which lessons and …
   1c. How? In terms of which applications they use, learnt from INSET of the First Level

2. Do teachers learn how to use ICT pedagogy in classroom-based instruction through certain training methods such as:
   2a. In course delivery of a specified curriculum and course based activities.
   2b. Any other method?
   3. Do they feel confident and competent in utilizing ICT pedagogy in the classroom?
   3a. Do they regard ICT as a useful and effective mean of classroom teaching?
   4. Do teachers, after the INSET course, actually practice ICT pedagogy in the class?

Specifically, the fieldwork ran for an academic year. The instruments that would best help respond to these questions were based on similar research studied and selected by the researcher through a review of the relevant literature such as Ozen (2008) who reports on in-service teacher education in Turkey. He supports the suggestion that applicants for these programs should be carefully monitored before in-service training begins and that such programs should be cautiously evaluated afterwards, in terms of their original goals.

4.1. The Questionnaires

Prior to and after the INSET training, the researcher designed, created and distributed questionnaires. Preceding the INSET course, he disseminated the pre-INSET questionnaires. The first distribution of the specific questionnaires to the selected twelve participant teachers took place before the INSET course, where the researcher attempted to elucidate the details and unveil the overall picture of the primary school teachers’ stances and attitudes on the subject, their various degrees of use of ICT and ICT pedagogy in school and at home as well as any diverse instruction modes they adopt in classroom teaching and any opinions and ideas they embrace, as well as any expectations they anticipate for the forthcoming course. The teachers’ score and their level of agreement or disagreement on the statements in correlation to in-class observations on ICT use, their answers to the questions and the interviews, could provide the necessary data for the researcher to distinguish the teachers’ profiles in relation to ICT use for education purposes. Lastly, the third section encouraged teachers to provide a personal opinion about the course they have already attended (INSET of the First Level) and additionally express their positive or negative thoughts, expectations and any other ideas and propositions concerning the effectiveness and usefulness of the next level course.

Additionally, the distribution of the post-INSET questionnaires and the conduct of the post-course interviews took place in the study, in an effort to validate particular statements and stances, promote deeper understanding of the particular profiles, record any potential transitions as well as evaluate ways of promoting competencies and practices with ICT pedagogy and the possible reasons and influencing factors for the various degrees of ICT pedagogy implementation, (certain indicative questions are in the Appendix section).

The initial distribution of the questionnaires allowed the researcher to gather information in order to provide background experiences for the study such as level of knowledge, skills and stances on ICT pedagogy. Furthermore, distribution and analysis of the post-INSET questionnaires strengthened the research through enrichment of data on the teacher-trainees promotion of confidence and competencies on ICT pedagogy and the documentation of characteristic statements on the effective or not implementation of ICT pedagogy in classroom teaching.

4.2. The Interviews

Through this particular phase of the study, the researcher also conducted semi-structured interviews of teachers, in an effort to trial the questionnaire and promote understanding of the various profiles of the teachers on ICT pedagogy. The interviews consisted of twenty-one questions. Initially, the first level of questions aimed at acquiring background
information and the level of computer skills of the teacher-interviwee. Thereafter, questions on school infrastructure and ways and purposes of computer use at home and in school were explored. Finally, in the last range of questions, personal views on computer use in classroom instruction, opinion-evaluations of the INSET of the First Level course and any expectations, thoughts and ideas of the INSET of the Second Level course were sought, (certain indicative questions are in the Appendix section).

4.3. The Observations

Regarding the in course observations, the daily diary of events helped the researcher-trainer to acknowledge the different profiles of the trainees as well as their varied levels of knowledge and skills on the subject and also their diverse educational context and culture. In the researcher’s view the combination of questionnaires, in course observations and interviews added to the validity and reliability of the outcomes of the research through cross data checking using a variety of information sources.

5. The Research

The research is characterised as action research, since the researcher adopted and implemented the following characteristics:

- Diagnosing,
- Action planning,
- Action taking,
- Evaluating and

Reason and Bradbury (2008) describe action research as an approach which is used in designing studies which seek both to inform and influence practice. Meyer (2000) maintains that action research’s strength lies in its focus on generating solutions to practical problems and its ability to empower practitioners, by getting them to engage with research and the subsequent development or implementation activities. Meyer states that practitioners could select to research their own practice, implement practical solutions and reflect on the process and outline of change. There are also certain limitations in the particular research mode and study such as a closed unique monitoring of events and behavioural characteristics by the researcher-trainer and the specified time and place frame of the study and the sample, a research group of twelve teacher-trainees in the city of Thessaloniki, Greece.

6. Data Analysis-The Trainer’s Intervention

Drawing from the statements in the pre-INSET questionnaires, diary of events and the interviews, the researcher recorded characteristic, repetitive and distinctive statements, behaviours, patterns of thinking and acting expressed by the teachers that led him into the identification and categorization of the participants into three specific profiles, the Innovative, the Moderate and the Reluctant. Acknowledgement and transcription of the statements was a long process with a focus on detail and the assistance of the NVivo 9 research software for analysis and insight. The statements were categorised into four main areas, descriptors and key subjects that indicate specific qualities of the teacher-trainees and the overall stance in teaching through the utilization of ICT pedagogy:

- Successful Learning: The various ways of perception of effective learning of the students by the participants.
- Behaviour: Diverse attitudes adopted and presented by the indicated profiles.
- Creativity: Diverse views on children’s’ creativities with the use or otherwise of ICT pedagogy by the different profiles.
- Curriculum: Effects of the curriculum in teaching with ICT and the varied approaches to the issue by the different profiles.

Characteristic and representative statements, (all statements translated from Greek) expressed continuously by specific teacher-trainees, based on the analysis of the results from the different research tools, (pre-INSET questionnaires, pre-INSET interviews and daily diary of events), and based on the different indicated profiles are illustrated further:

Statements from an Innovative categorised teacher-trainee

I have to say that the children were thrilled and made progress by using the computer throughout the lessons. What I had to teach, I taught easier, direct and faster. The most important is that computers motivate the children to learn and make teaching effective but not only that. Effective teaching is accomplished due to the fact that, computers and knowing how to use them, present children with certain images and sounds that make easier, effortless and simpler for them to understand and familiarise with the curriculum and new cognition. I believe computers are essential in teaching and in certain lessons.

Statements from a Moderate categorised teacher-trainee

The use of the computer today is not supported by the current conditions. Computer use is not connected to the curriculum and the teaching process. Time is also restricted. We cannot teach with the computer within 45 minutes, especially the language lesson. The children could not learn this way. I don’t think that I had specific results with ICT use in teaching. Due to the fact that I had no support with the curriculum, any approved educational software or some official guidelines I abandoned its use. I had discipline problems and no infrastructure such as new computers.

Statements from a Reluctant categorised teacher was:

I prefer the book, the smell and the riffling of the book. I used the computer once this year just to show some interesting videos from a CD-ROM of monasteries in Mount Athos. I used it after a lot of thought. I use the computer only when I could not find anything on paper. I prefer find something in a book than on the computer. You need to use the computer with caution and have to choose what to use and not use.
According to the organisers’ guide book, the trainer had to present the relevant theories on ICT pedagogy and the relevant educational software tools to the teacher-trainees as well as assist them to design and create an educational scenario on ICT pedagogy for in classroom implementation.

Through the course and when certain data emerged on the variety of the teacher-trainees profiles and levels of competence and confidence as well as the diverse educational settings, based on the statements in the questionnaires and the interviews as well as the in course observations, the researcher decided that the general guidelines and instruction strategies were not sufficient to promote engagement, confidence as well as knowledge and competences for the participating teacher trainees. Certain characteristic and representative statements that led the researcher-trainer to this decision-action from the applied research tools follow:

In Session Statement: I find it hard to understand the theory and how to integrate it in my classroom setting. There is no point in just presenting the tools and the theories. I need support in my class technical and pedagogical, practical examples and collaboration.

Statement from the Pre-INSET Interview: I have a very diverse classroom with many children who present difficulties in reading, writing as well as behavioural problems. I need constant support, guidance and collaboration in order to apply the tools in my class.

Statement from the Pre-INSET Questionnaire: I have no infrastructure, many technical problems in my school and no support from the colleagues. I do not feel confident to apply ICT in my everyday teaching. I need practical activities so as to understand how to use the tools and the theories. Also we could help each other through collaboration and support.

Thus he decided to alter and adjust his training modes and tuition scenarios. He did not just stand and abide to a simple introduction of the predetermined topics of the course, but felt the need to tailor the training sessions to the needs and knowledge levels of the teacher-trainees. After long discussions with the teacher-trainees and in order to understand them better in terms of knowledge, self-efficacy, pedagogical beliefs and culture, he considered adjusting his training methods through introduction of certain techniques based on a specific theory that allowed him to manage better the learning community as well as promote knowledge outcomes and participation. Certain characteristic statements from the participating teacher trainees, based on the profiles, from all twelve participants, that prompted the trainer to alter his instruction modes and techniques are portrayed further:

Reluctant Profile, Statement from the Pre-INSET Interview: I cannot understand how to implement these tools in my teaching lessons; I have children with a variety of problems, low confidence, distraction, lack of understanding of the language, dyslexia, economic immigrants etc. I need first to tackle this situation and then to try and integrate new technologies in the classroom.

Moderate Profile, Statement from the Pre-INSET Questionnaire: We have some laptops closed in the teachers’ room. There is a need to install the software and bring them to the class. I do not think I will be able to do this without any support. I also need guidance to apply the teaching scenario in my classroom setting.

Innovative Profile, In Session Statement: We need quality tools that could be effectively applied in our classroom setting. I would prefer more practical examples and activities. We could work in groups and exchange advice, suggestions and ideas.

The researcher, through his preliminary study and through previous conversations with the teacher-trainees, discovered that trainees prefer to actively participate and learn in collaborating, problem-based, authentic, instructional environments connected to their classroom practices which acknowledge their culture, background, preconceptions, misconceptions and needs. It is the researcher’s belief that all these prerequisites need to be incorporated, in the construction of the INSET course in order to be effective. A characteristic In Session statement follows:

It is much better to actually practice together in groups with the educational software you are presenting and create lesson plans that we could effectively integrate in our class and learn from each other’s solutions, ideas and school problems. I have revised my misconception on the difficulties of the tools and the engaging features they provide for the pupils.

Furthermore, from the statements in the pre-INSET questionnaires, it was revealed that during the previous training course, on the first level training, basic computer skills, no account was taken of their differing background experiences and learning needs. In addition, there was no or a minimum transferability of the trainers’ conceptions to the trainees. Further the experiences they gained had no reference to their pedagogy and classroom practices. A characteristic Pre-INSET Questionnaire statement follows:

The trainer did not ask us of our knowledge of ICT nor our experiences, and any problems we face in our class.

Considering the teacher-trainees’ statements, the researcher-trainer decided to take the initiative and tailor the training modes through collaborative group work, aligned with the trainees’ competencies and needs as well as extent the instruction, outside the training center and into the classrooms of the trainees. Although the course’s time length seemed adequate, it could be argued that the scheduling of supportive field trips for in classroom practice with ICT pedagogy by the trainer to the schools’ of the teacher-trainees proved necessary for the effectiveness of the course. Teacher-trainees stated that for the successful implementation of the INSET course, certain prerequisites need to be applied: training groups should be formed according to the trainees’ background experiences of ICT, the duration of the course should be extended and extra training hours in classroom practices with the use of ICT needs to be enforced (Tzimopoulos, 2003 pp 85-88).

7. The Training Theory

Due to the emerged data as well as the statements of the
teachers, the researcher focused on a specific theoretical domain on adult learning that seem relevant, important, and central to this study. The research stands on the theory of Situated Cognition and the Communities of Practice, (Lave and Wenger, 1991). The theory presents the concepts of communities of learning, legitimate peripheral participation and cognitive apprenticeships. These concepts study the development of a particular profile by the participants, which constitute learning through participation in a specific social and cultural context and in a particular instructional setting.

This theory acted as the main research, theory-tool, which guided the researcher-trainer into acknowledging and understanding the different qualities and types of teacher-trainees such as the various profiles, knowledge, competencies as well as attitudes that they may present. Through this perspective the researcher tried to promote and identify the effectiveness of the INSET course by developing and distinguishing a model of change on the teacher-trainees’ profile, stances and beliefs in the use of ICT pedagogy in classroom instruction. The researcher-trainer took the initiative to apply this theory into the sessions and test them during and after the implementation of the course in how well they supported efficacy in promoting competences and learning outcomes through the creation of specific instructional settings granting the particular learning needs, preconceptions and misconceptions of the teachers.

Statement from the Post-INSET Questionnaire: Through the workgroup and the practical activities I can now understand how to implement the educational software we have learnt into my lesson plans and my individual classroom environment.

Through the discussions, recorded statements, exchange of thought and ideas as well as the varied participation modes and the noted learning outcomes of the teachers in the specific community, the trainer unveiled the trainees' stances and managed to identify and documented the shifting profiles. A detailed study of the daily diary of events, and the documentation and indexing of certain behavioural stances, such as specific volumes of participation, diverse degrees of contribution in the course, various levels of confidence and competence on the subject as well as the shifting trajectories of the teacher-trainees, lead the researcher into the tailoring of the instruction methods from a plain presentation of the tools and theories to an active, collaborating and on site supportive training, through acknowledgement and categorization of the needs, competencies and profiles of the teacher-trainees.

The researcher-trainer aimed at creating an educational environment, that could promote learning through the encouragement and distribution of certain practical educational activities and collaborative learning scenarios with the use of ICT, seeking new ideas, supporting critical thinking, planning and promoting solutions with the utilisation of ICT pedagogy.

Many new and interesting ideas came to light and according to the observed and recorded data from the training sessions; the teacher-trainees appeared to have gained in knowledge on ICT use as well as on new instructional methods. According to the various session recordings, the teacher-trainees managed to work in groups, achieved collaboration, promoted and understood evaluation techniques, critical examination and appreciated the value of exchanging practicable ideas and thoughts. A representative participant statement supporting the aforementioned arguments follows:

Statement from the Post-INSET Interview: We managed to collaborate, although we thought that it would be hard at first, we worked really well together on the activities, find solutions to the problems, evaluated critically the tools and the lesson plans and produced interesting projects. I believe that now I understand the techniques and the proper educational ICT tools I need to adopt and implement in order to achieve effective use of ICT pedagogy in my class.

8. The in Session Differentiated Activities

Through the distribution of pre-INSET questionnaires and the conduct of pre-course interviews, in the early days of the course, the researcher-trainer attempted to identify the competence level of the teacher-trainees in terms of volume, variety and level of computer use, in class and at home. Following the analysis of the data and during the course, the researcher-trainer initiated a discussion on the issues of the skills level, effective ways and volume of use of ICT pedagogy with the teacher-trainees in the schools, in accordance with their school’s infrastructure as well as the support and degree of collaboration of the colleagues and the head teacher of the school. As a result, he was able to focus on adjusting the cognitive experiences provided in the course, through specific strategies and tasks, to the trainees’ learning needs and level of competence, increasing accordingly the instruction’s value and keeping trainees interested, engaged and motivated. Subsequent and based on the results collected from the research tools, the researcher-trainer took the initiative to introduce to the teacher-trainees a set of collaborative tasks. A representative example follows:

The researcher-trainer formed groups of teacher-trainees who are employed in similar educational environments and areas of the city, such as deprived areas of the city with many economic immigrants or behavioural problems and also teach the same level classes. In the groups all the identified profiles of the teacher-trainees were active. Firstly the groups discussed their school issues and got acquainted through the exchange of problems, thoughts and ideas. The researcher-trainer followed them with discreet and intervened when necessary, presenting ideas and suggestions. Further, each group had to fulfil a task involving the utilisation of ICT for the implementation of an effective in class scenario. The task was the creation of an educational multimedia presentation, with the utilisation of a variety of applicable educational tools and software, formerly introduced in the training.
sessions, on the topic of language learning and in particular on the topic of the history and creation of the tales and proverbs of Greece. The trainer initially guided and supported the groups portraying a flexible template with a variety of tools and teaching activities, adjusted to the educational and technical infrastructure and the educational environment of the trainees. From the relevant template they could get guidance, ideas and suggestions on the design and creation of the educational scenario. The groups, after the initial guidance by the trainer and the support on modes of working, portrayed effort, collaboration, and effective communication in addition to determination to fulfil the given task. At the end, each group presented their work and exchanged suggestions and ideas with the other groups. It is worth mentioning that a variety of very interesting ideas came into light, a lot of new and noteworthy tools that could effectively support the task were also suggested by the participant-trainees and a friendly and supportive training environment was established. As noted by the researcher-trainer in the, in-session observations and daily diary of events, the early issues of insecurity and inconvenience were replaced by a friendly and collaborative workgroup setting who managed to complete the given tasks, through mutual understanding, support and exchange of effective ideas and suggestions.

9. The in Class Support

The researcher-trainer also took further initiatives that were not pre-designed nor integrated into the training directions of the course by the organizers of the program. The first initiative was to support the teacher-trainees in their school environment through field-visits in a series of in class implementations of collaborative lesson plans with the use of ICT pedagogy. Accordingly the researcher-trainer followed the teacher-trainees in their school environment and operated participant-supportive classroom teaching and observations in an effort to investigate and analyse any cultural and contextual needs or requirements for the specific training as well as note the effectiveness of change in the trainees’ stances, knowledge and competencies. Through the visits the researcher-trainer attempted to identify whether teacher-trainees through the in-class support, training method, will reinforce the transition in their attitudes and beliefs in the effective use of ICT in classroom instruction and also whether they will acquire and promote, sustained and permeated pedagogic ICT classroom practices in genuine work environments through the expert-novice learning model. According to the field notes of the researcher and characteristic, representative statements of the teacher-trainees, they all seemed to have adopted an active, participating and collaborating role and stated rather confidently to continue implementing the educational scenario, or similar educational setting, exhibited in the sessions. The specific teacher-trainees were selected as representative of each profile: Innovative, Moderate and Reluctant. They projected certain issues such as demands as of the introduction and use of quality educational tools, (Innovative), insecurity and phobias, (Reluctant) and raised many issues on support and collaboration, (Moderate) in the early days of the course. Yet and through the in class supportive sessions, they portrayed change and progress in confidence and competence.

Andreas, (Innovative): It was a really interesting experience. Thank you very much for visiting our school, supporting us and presenting the teaching with ICT pedagogy. I will also try to transfer my knowledge to the other colleagues of the school who expressed will to use ICT in classroom teaching so as to collaborate and support each other. I will further try to convince the parents association and the Head teacher in equipping the school with more laptops for in classroom instruction.

Helen, (Moderate): Thank you for the support to install the software and organise the activities in the class. I can now understand how to set the tasks and control the class through the project. I was afraid of malfunction and behavioural issues but now I believe that I can effectively utilise the specific software and on line tools in my everyday classroom practice.

Julia, (Reluctant): I have realised much better now the concept of classroom teaching with the use of ICT. I could apply certain methods and models of teaching with ICT pedagogy, organise the children in groups and also introduce certain tasks and exercises. Furthermore, I could monitor the children in completing the activities and evaluate the process. Since the software is now installed on the computers and I have observed, worked and understood the process of integrating it with certain learning activities I will use it.

It could be argued that the specific form of training seemed rather important and essential, among other parameters, for promoting the acquisition of knowledge, encouragement and motivation for the particular teachers. Furthermore, what could be of importance and interest now is the issue of the continuation of the integration, by the specific teacher-trainees, of the previously illustrated teaching and learning methodology with the use of ICT pedagogy in classroom instruction.

Additionally, the researcher took the second initiative to follow again the teacher-trainees in their classroom environment after the end of the course in an effort to observe and support the trainees. Through a ‘Distributed Community of Practice’ (Pea and Gomez, 1992) the ‘on the job’ training model and the ‘membership associations’ (Wenger, 1998) between the researcher-trainer and the participants, the researcher followed once again the trainees in their school environment and attempted to record any potential shift in practices with ICT pedagogy such as any progress, stability or decline as well as any transition in attitudes and behaviour through the time. It seemed that in order for the researcher to reveal and document the varying stances of the trainees, it is important to continue the study so as to uncover the overall picture of the participants. That could be achieved through the recording of characteristic statements, the volume and level of practices with ICT
pedagogy as well as the various instruction methods adopted. It could be argued that the identification of any changes could not be achieved through just one field trip, but rather by numerous field trips and over an extended period of time. A detailed temporal study and the continuous recording of the trainees’ statements and behavioural modes could contribute to the creation of a clearer and more thorough portrait of the trainees’ profiles, as well as an extensive mapping of the influencing factors, relating to the issue. A table illustrating change and progress through the various phases of the training course unfolds further:

<table>
<thead>
<tr>
<th>The Phases of the Training Course and the Progress of the Teacher-Trainees</th>
<th>The In Class Support Organised by the Researcher-Trainer</th>
<th>The Evaluation, Selection and Implementation Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution of the pre-INSET questionnaires and conduct of Interviews. Issues of Insecurity and doubt for the effectiveness of the theories and the tools portrayed in the sessions by the Moderate and the Reluctant. The Innovative ask for a variety of quality tools and practical activities.</td>
<td>Creation of tailored to the skills, knowledge, educational context and culture of the teacher-trainees templates by the trainer. The templates portraying theories and tools aimed for the design and creation of effective and applicable educational scenarios for in classroom implementation by the teacher-trainees. Presentation of the scenarios by each group and valuable exchange of ideas and issues by all the profiles in the course.</td>
<td>On-site supportive tailored to the educational context and culture of each participant-trainee instruction and guidance by the trainer. Resolving of various issues such as malfunction of computers as well as behavioural problems and collaboration issues by the pupils. Increase of ICT pedagogy implementation by the Moderate and the Reluctant profiles after a number of visits. Promotion and integration of quality ICT pedagogic tools and methods by the Innovative profile teacher-trainees. Distribution of the post-INSET questionnaires and conduct of Interviews. Overall reflection and evaluation of the illustrated in the course ICT resources. Increased participation and collaboration by all the profiles. Selection of the most applicable and effective instruction modes and educational tools. Guidance for the future and effort to resolve any problems that the teacher-trainees faced during the classroom teaching with the use of new technologies.</td>
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</tbody>
</table>

**Table 2. Presentation of Data through the Phases of the Training Course.**

### 10. Discussion

It could be argued that, through the study, emerged a certain finding. Active training methods, through participation and engagement in cognitive experiences, are effective in the promotion of skills and competences. This could be positive through involvement of the trainees in an active and collaborating training community, as well as in a differentiated and adjustable training environment.

It seems that the researcher-trainer during his field visits to the teacher-trainees schools became a potential member of the specific school community, being responsible for ICT training and support for the specific school. This exclusive connection between teacher-trainer and the school has been supported in many cases by the certain strategies followed in various countries, which “encourage the designation of one teacher within the school as ICT coordinator, to act as the central reference point for ICT issues and support colleagues on technical and pedagogical issues” (OECD, 2001, p. 94).

Through the study it is argued that certain factors influence the participants and the learning outcomes more than others. New modes of training, in class support and guidance, receptiveness and adaptability by the teacher-trainees are quite significant in promoting and sustaining innovation. The researcher-trainer risked by surrendering his own agenda throughout the course, by distancing the sessions from the pre-designed curriculum and methods of training. Consequently, the researcher-trainer through adoption and implementation into the course of certain, tailored to the needs and profiles of the trainees, alternative modes of training, managed to produce effective outcomes within the specific context, time, place and culture.

Although the study presents certain limitations, such as the small research sample and the specified place and time frame, from the cross examination of the research tools and the analysis of the findings, it could be argued that teachers need to be reinforced through quality in course and in class, tailored to the needs and profiles of the teacher-trainees, supportive training, effective collaboration with the trainer and the co-trainees as well as the existence of a quality functioning infrastructure, at school and in-class. Furthermore, it might be important to engage in a comparative research process, both cross-cultural and between countries with similar socio-economic situations, such as Portugal, to reveal any differences or similarities in the training programmes and in particular the trainers’ interventions, techniques and any differentiated modes of transfer of skills and knowledge, as well as the volume of ICT pedagogy integration in the schools of each country.

### References


