FACILITATING PROBLEM BASED LEARNING THROUGH E-PORTOFOLIOS IN EFL

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Abstract

The use of electronic portfolios, or *e-portfolios*, is considered an emerging practice in preservice teacher education. The twenty-first century is an attempting time for teachers. Traditional ways of teaching, are no longer adequate to prepare our new generation for the knowledge based economy. The challenge now, for foreign language trainers, is to equip students with learning, critical thinking, and problem-solving skills that will enable them to cope with the demands of this fast moving environment. Problems make us think and we learn by thinking. Languages are learnt more effectively when we use them to solve problems. This chapter describes the development of an *e-portfolio* to support the problem-based learning process, with the aim of using it to scaffold knowledge construction, document students' learning, and facilitate evaluation. Exactly the use of an e-portfolio in a course of English Language Teaching module, for student teachers in Albania.

Keywords: E-portfolio, problem – based learning(PBL), scaffolding, cross-curricular teaching

Introduction

Education must promote the creation of a critical group of learners, with greater reflective skills and higher level of reflective practice. With the ease of access to information, the twenty-first century is a trying time for teachers and educators. Teachers also, need to provide evidence of the process and progress of student learning over time, for the purpose of evaluation (Wickersham & Chambers, 2006). So, if it's needed to do any change in how we perceive teaching and learning, the change must begin in teacher education, with student teachers.

This chapter describes the development of an e-portfolio to support the problem-based learning process, with the aim of using it to scaffold

knowledge construction, document students' learning, and facilitate evaluation.

1. Problem–Based Learning and Teacher Education

What is PBL?

There are many versions to the definition of PBL. Finucane, Johnson and Prideaux (1998) define PBL as a learner-centred educational approach, that focuses on independent learning and a deeper understanding of the subject matter, by allowing learners to play an active role in solving problems which mirror real world problems. This definition is echoed by Mayo *et al*. (1993) who define PBL as a pedagogical strategy which uses real-world situations as the basis for the development of content, knowledge, and problem-solving skills. PBL is an excellent strategy because it includes a *curriculum and process* that guides exploration in various directions with pragmatic outcomes.

It is a pedagogical methodology that is in accordance with the constructivist principles of learning (Hendry & Murphy, 1995). It is an active learning, learner-centered approach that provides students with opportunities to construct their own knowledge through peer interaction and cooperating inquiry. In PBL, problems are designed to trigger learning. In PBL, learners work in small groups trying to solve a problem. They discuss possible causes, develop hypotheses and strategies, search for more information, refine their solutions and finally reach a conclusion. During this process, they develop and use different skills such as reflective thinking, problem-solving, decision-making, and communication, and thus, construct the target knowledge. This is the problem-solving process, of finding solutions.

Hutchinson suggests that " languages are learnt most effectively when used to solve problems. Problems make students think and they learn by thinking." (Hutchinson, 1987: 1). It is proved that knowledge gained through learner's own effort and thinking is likely to be stored in a long-term memory. However, 'ready-made' pieces of information are usually forgotten very soon. There is strong evidence that problems have the power to stimulate students to gather, compare, sort out and evaluate facts. Most important of all, PBL makes it possible for the gap between school and the actual real-world situation to be narrowed. It prepares learners for the working world.

1. 1 Portfolios in Teacher Education

Portfolios have been introduced to education in the 1980s (Lyons,1998). They are "logical vehicles because they provide a systematic, continuous way of planning, supporting and monitoring a teacher's professional advance" (Bird, 1990, p. 244). A portfolio in teacher education

could be defined as a collection of information about a student teacher's abilities gained in different contexts over time. Wolf & Dietz (1998, p.13) described the essential features of portfolios: ***"*** *A portfolio is a structured collection of teacher and learner work created across diverse contexts over time, framed by reflection and enriched through collaboration that has its ultimate aim the advancement of teacher and learner learning.***"** or as it was defined by (Wickersham & Chambers, 2006) as a collection of students' work demonstrating their learning process and progress. It should contain artifacts selected by students to showcase their best work, to demonstrate development and to provide opportunities for reflection on their learning process.

The potential of portfolios to enhance reflective thinking, has been of special interest to the PBL teachers and facilitators. ***The benefits*** of using portfolios are:

- ❖ Receiving support and guidance from those involved in the portfolio process
- ❖ Being able to share ideas about portfolios with peers
- ❖ Improving communication with faculty
- ❖ Developing organizational skills

It is essential that the written narratives in a portfolio do not become a *scrapbook of descriptions, but should contain reflections of the learning and teaching experience.* A language portfolio is like a large expandable file folder that holds the following:

- ❖ Samples of the students work selected by the teacher or the student
- ❖ The teacher's observational notes
- ❖ The student's own periodic self-evaluations
- ❖ Progress notes contributed by the student and the teacher collaboratively
- ❖ Daily lesson drafts

The range of items is almost limitless, but may include the following:

- ❖ Written responses to reading
- ❖ Reading logs
- ❖ Selected daily work
- ❖ Pieces of writing at various stages of completion
- ❖ Classroom tests
- ❖ Checklists
- ❖ Unit projects
- ❖ Audio tapes
- ❖ Video tapes

The key is variety, so that teachers, parents and students can build a complete picture of the student's development. This type of portfolios can be

evaluated through the collaboration of classroom teachers, students and parents, even school administrator.

However, several have shown some ***limitations*** of using portfolios in teacher education. These include:

- ❖ storage
- ❖ maintenance
- ❖ accessibility

Student teachers collect a variety of artifacts, such as evaluations from supervisors and co-operating teachers, reports of observations of teaching, lesson plans, learner work samples, and photographs of teaching experiences in their portfolios. So to solve the problem of these storage, maintenance and accessibility, students and trainers throw their eyes on the use of technology, that means by developing electronic portfolios.

1. 2 E-Portfolios

An *e-portfolio* is a compilation of portfolio items—audiovisual, graphical, or text stored in electronic formats (Barrett, 2001). It is organized by using a combination of multi media tools such as audio/video recordings, multimedia programmes, database, spreadsheet and word processing software, as well as CD-ROMs, and the World Wide Web, with hypermedia links connecting that evidence to the objectives of the course and programme. These e-portfolios have several ***benefits*** for teacher education, such as:

- ❖ increase in the technology knowledge and skills
- ❖ facility in distribution
- ❖ storage of many professional documents
- ❖ increase in accessibility

On the other hand, Wetzel & Strudler (2006) highlighted the following ***disadvantages*** of electronic portfolios:

- ❖ issues of programme implementation;
- ❖ access and reliability of the technology
- ❖ the amount of time and effort needed to develop portfolios.

However, despite such limitations, foreign language students and teacher trainees have begun to explore the use of technology as a tool in the development of portfolios for several reasons, such as: for assisting learning, formative or summative assessment, and seeking employment (Barrett, 2002). In fact, others underline that traditional assessment strategies will not be appropriate for attaining the goals of problem-based learning. For this reason, they propose the use of portfolios to document students' reflections for different periods, their progress, and their goals. Other proponents of portfolios have argued that these tools facilitate the demonstration of critical thinking when learners engage in reflective writing about their construction,

selection, and revision of artifacts. While Hewett (2005) emphasizes that "*as a model for learner-centered classrooms, e-portfolios give students ownership and responsibility for their own learning*" (p. 27).

E-portfolios, have focused primarily on demonstrating students' achievement of standards (e.g., in teaching or nursing) or their technological competence (e.g., Barrett, 2002; Chambers & Wickersham, 2007; Ledoux & McHenry, 2006; Wickersham & Chambers, 2006). Very few have employed portfolios to scaffold and *document students' learning in problem-based learning*. Practical findings emphasize the potential of e-portfolios to provide *a structure for learning, to encourage reflection, and to facilitate collaboration.*

1.2 Problem Scenarios set in the Albanian Context

Part of the foreign language teacher education programme is also the *practicum,* during the third semester of the Master studies. It lasts nearly 5-6 weeks. Students start with observations and they are required to do actual teaching only in the last session. The students surveyed for this experience, were 62 graduate students in the final semester of the Master Studies, at the University of Vlora, Albania. They were observed while conducting their classes during the weeks of the practicum. The aims of teaching *practicum are :*

- ❖ to develop student-teacher confidence in the teaching attempt;
- ❖ to enable them to develop some practical skills needed in their future role as a teacher;
- ❖ to enable them to be active and familiar with forthcoming professional responsibilities.

Seen in this prospect, and within the *problem-based learning context,* some problem scenarios, dealing with *discipline problems* were provided to the students. Nearly all the classes of EFL, in the 9-the year educational system do have overcrowded classes. The number of students per class varies from 35 to 40. So discipline problems are always present, not only for student teachers, but even for service or full-time teachers.

Task: Analysing episodes, *discipline problems.*

Scenario I

The teacher of a mixed class of thirteen-year-olds is working through a class reader in an English lesson. He asks Terry to read out a passage. " Do we have to do this book?'' says Terry. "It's boring.'' Some members of the class smile, one says "I like it", others are silent awaiting 'the teacher's reaction……..

(from E.C.Wragg, Class Management and Control, Macmillan,1981, p.12)

Scenario II

The teacher has prepared a worksheet and is explaining how to do it. He has extended his explanation to the point where Ben, having lost interest in the teacher's words, begins to tap a ruler on his desk. At first the tapping is occasional and not too noticeable, but John begins to tap more frequently and more noisily, building up to a final climax when he hits the table with a very loud bang. The class, startled by the noise, falls silent, and looks at both Ben and the teacher to see what will happen…..

(adapted from E. C. Wragg, Class Management and Control, Macmillan, 1981, p.18)

Scenario III

Large heterogeneous classes are seen mostly as problematical; but they have their advantages as well; and some of these can be used to help solve the problems. What positive aspects of large heterogeneous classes can you think of that might aid teaching? Make a quick list basing yourself in the experience you acquired during the practicum…

(adapted from Penny Ur, A Course in Language Teaching, Trainee book, Cambridge, 1999, p. 135)

2.3 Design Process of PBL

In class, students were given a choice of the three scenarios, all based on real-life challenges in the classroom. They worked in small groups of five to six, to develop possible solutions for the given problems. The conceptual framework for the PBL process, based on Tan (2003), is shown in **Figure 1.**

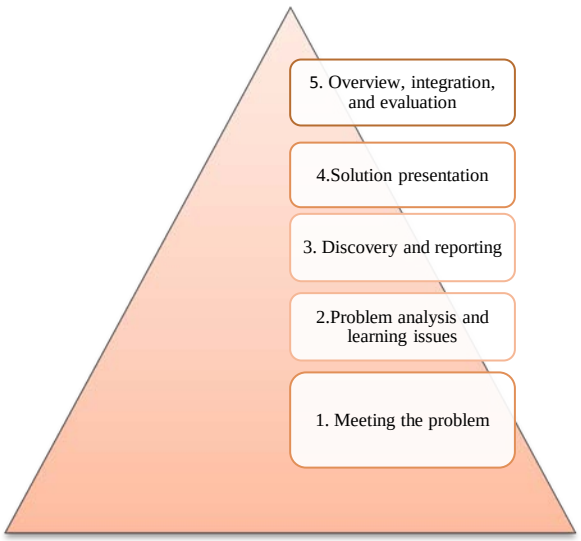


Figure 1. The problem-based learning framework

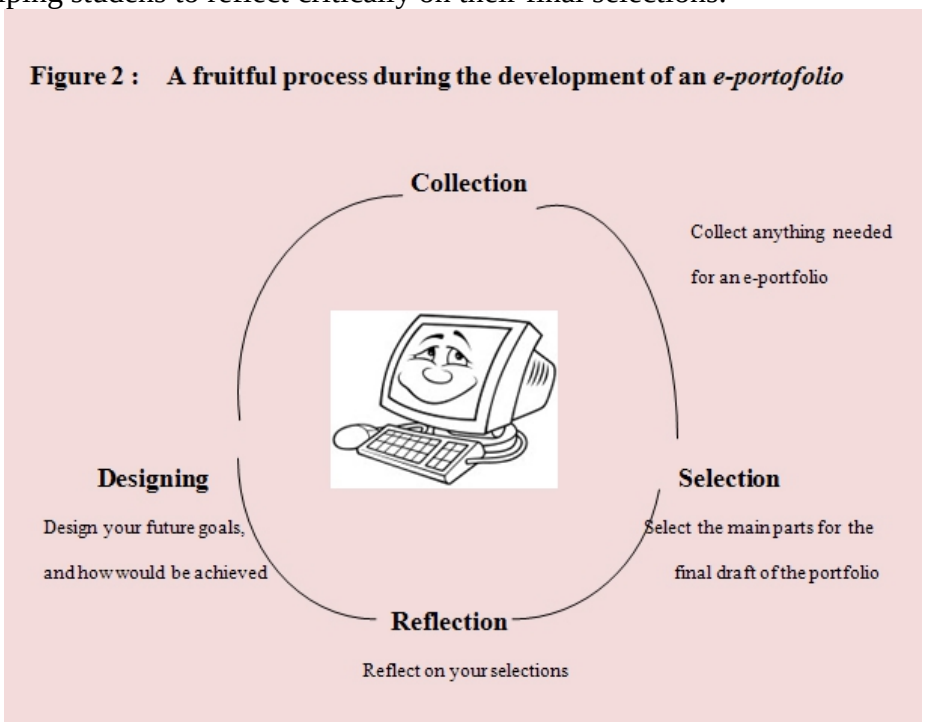
2. 4 Structure of the E-Portfolio

Since little is known about the design of e-portfolios that would suit the PBL classroom, a decision was made to develop the e-portfolio specifically for our student teachers based on our course objectives and on PBL framework. The choice of an *e-portfolio* rather than a paper one is consistent with the observation *of Strudler and Wetzel (2005) that a major reason for the diffusion of e-portfolios in teacher education programs is the difficulty of sharing and moving large paper portfolios around.*

First, the tools for creating students' e-portfolios had to be selected. Bearing in mind that the combination of PBL and portfolios could prove too difficult for students (Oberski et al., 2004), it was decided to construct hyperlinked portfolios ***using PowerPoint***, in which all student teachers are well-adapted. This would allow our students to focus their attention on the content of their e-portfolios instead of spending long hours trying to learn and experiment with unfamiliar tools. The e-portfolios would then be uploaded onto Blackboard for other team members and the rest of the class to share. The e-portfolio was designed specifically *to scaffold knowledge construction, document learning, and facilitate idea sharing, as well as to guide students through the PBL process by informing them of the learning objectives at each stage.*

Ash's model (2000) **(Figure 2**), proved to be an effective proces, in helping studens to reflect critically on their final selections.

Figure 2 : A fruitful process during the development of an *e-portofolio*



The e-portfolio should facilitate the PBL process by making students record their plans and actions, as well as offering scope for reflection and evaluation. After hours of brainstorming and discussion, the structure of the e-portfolio was established. In essence, it comprised five main stages that corresponded to the PBL framework. *The objectives, instructions, and reflections of each stage are outlined below:*

Stage 1. Problem Encounter

At this stage, the aim was for students to gain a clear understanding of the scenario and to reach a group consensus on the problem statement. Students were instructed to read through the scenario on their own, underline key words, and highlight main points, after which they were to discuss in their own groups to establish the same understanding of the scenario. Team members were asked to each describe the scenario in their own words and link it to their own experiences and prior knowledge. To guide group discussion, the following questions were provided in the e-portfolio:

- What are your thoughts on this scenario?
- What comes to mind?
- What do we know?
- What are the statements of facts that we can identify?

The discussion was documented in the e-portfolio with the use of notes, mind maps, or a journal of problem inquiry.

After obtaining a clear understanding of the scenario, each group had to reach a consensus on the nature of the problem and to help in finding plausible solutions. Questions were posed to help students summarize the problem:

- What is the nature of the problem?
- Can you restate what the group discussed?
- Does the group have the same mental picture of . . . ?

Stage 2. Problem Analysis

During this stage, the groups had to brainstorm and generate possible explanations about the problem that they had chosen to study, as well as formulate learning objectives. Students individually came up with possible explanations before combining all team members' inputs into a comprehensive list. Every team member played an active role in this process. These questions were provided to help students generate ideas:

- What additional information might we need?
- What do we need to know?
- Could you think of anything else?
- What does that link you to?
- Have you considered all the possibilities?

The second part of this stage was possibly the most important of the PBL process—the *identification of learning issues and formulation of learning objectives.* To guide students, the following questions were asked:

- What is important for you to solve the problem?
- Have you listed all the key questions?
- What makes you include . . . ?
- What kinds of resources might be helpful?

Once the learning objectives were determined, the groups were instructed to assign tasks for self-directed learning to each member. These tasks would be to identify sources of information and conduct research with a view to finding an informed explanation for the problem. Each group member was required to compile a set of pointers and notes from his or her self-directed learning to share with and to teach others at the next stage.

Stage 3. Discovery and Reporting

Following self-directed learning, group members shared what they had discovered in their research. They needed to integrate and consolidate information as a group and help each other ensure the accuracy, reliability, and validity of the information obtained. To help them, students were encouraged to focus on the following questions:

- Describe what you have learned about . . .
- Explain what you understand by . . .
- How do you know?
- Could you elaborate on . . . ?
- How would you connect what you learned to . . . ?

The deliverables at this stage included statements on the sources of learning, information, and research.

Stage 4. Solution Presentation

The purpose of this stage was for the groups to present solutions to the problem and clarify doubts through a question-and-answer session. Each group had to synthesize their findings for a final presentation. Questions were posted in the e-portfolio to help students develop plausible solutions:

- What solution might you propose? Why?
- Explain the strategy/solution.
- What is at stake if we include/exclude . . . ?
- What are the pros and cons?
- What are the consequences?

The findings included each group's hyperlinked PowerPoint presentation, a script, and other materials needed for the presentation, such as a report and video clips or photographs of any model or artifacts. Among others, the final presentation had to cover the problem that the group had

focused on, the theory or theories related to the problem, and the proposed answers to the questions posed during problem analysis.

Stage 5. Review and Evaluation

The final stage required the teacher to round up the PBL process in a verbal review and evaluation session with the students. Thereafter, students were asked to reflect on their own research and learning process. To aid individual reflection, the following questions were used:

- What are the three key things that you have learned?
- What did you learn about yourself and your peers?
- What did you learn about your problem-solving approaches?
- How do you apply what you have learned to another situation?

The reflections were then added to the e-portfolio for the class to share.

3. Research Objective

The following research questions were posed for investigation in this study:

1. Was the e-portfolio easy to use? In other words, were the instructions provided clear enough and the content organized in a logical manner?

2. Did the e-portfolio enable student teachers to develop generic learning skills that were called for in the PBL process, such as problem solving, team collaboration, communication, and presentation?

3. Did the e-portfolio scaffold student teachers' learning process with regard to knowledge construction?

4. Was the e-portfolio effective in helping student teachers document their learning in the PBL process?

3. 1 Scaffolding

Most of the students agreed that the e-portfolio acted as a scaffold for the PBL process. Thoroughly detailed scaffolding was provided. Their comments were :

"…..the structure of the e-portfolio served as a guideline to help my team understand how our presentation or our PBL final product should be structured. There were clear instructions given for each step, it helped me to solve problems systematically and effectively"

Journals showed that they gained a great deal of skill and knowledge through experience:

"I personally believe that the project with the e- portfolio would be by far one of the greatest innovations that I have conducted in the years of studying English. The approach to this novelty was an excellent way to gain truthful, valuable skills, about language teaching (the main goal of our profession), improving technology skills, and sharing experiences with

others. I understand that computers and electronic portfolios are a wonderful teaching strategy nowadays. They allow flexibility, encourage to demonstrate originality and creativity. "

Conclusion

The study reveals that the *e-portfolio* has enormous potential for scaffolding the cognitive processes that are facilitated by PBL approach. The data prove that the *e-portfolio* facilitated the development of important PBL related skills, such as problem solving, collaboration, and communication, besides providing a structure for guiding and documenting learning during the foreign language learning process.

There was evidence that the *e-portfolio* promoted the ideals of PBL by facilitating a learner-centered approach that provides students with opportunities to construct their own knowledge. E-portfolios provide a structure for learning by scaffolding and documenting the learning process as well as facilitating the acquisition of generic learning skills.

In conclusion, in changing the way we teach and learn, we need to provide scaffolds instead of knowledge, to facilitate instead of mere lectures, to focus on learning skills instead of learning content, and to help students document their learning process instead of teaching them how to create a learning artifact. Clearly, the challenges are many, but the potential that PBL and e-portfolios hold for guiding students on their learning journey is great and risky.

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