UGC MAJOR RESEARCH PROJECT

Development of Information System on E portfolio Based Knowledge Generation and Sharing for Teacher Professional Development (2012-2014)

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1. Introduction

Within any institution, initiating an e portfolio project or approach to support student learning, represents new challenges. The idea of simply implementing student learning e portfolios, in the personal development sense, presents a number of difficulties as well as opportunities for any institution. Portfolios are used in several academic and non academic fields today, including arts, business, IT, health and architecture. An educational portfolio is a very personal collection of artefacts and reflections about one's accomplishments, learning, strengths and best works The collection is dynamic and ever changing. It shows a students' growth(developmental portfolio), best works(showcase portfolio), or total output(comprehensive portfolio). It is a tool for reflection on the items collected, and must be approached from the point of view of the compiler.

In many professions, portfolio is a very familiar term. Portfolios have been a p rimary method of evaluation in fields including art, architecture, modeling, pho tography, acting, and journalism. Portfolios are utilized as interactive tools. T he "expert" master artist, for example, critiques and suggests; the "novice", beg inning artist responds and evolves. The portfolio documents proficiency, skill, style, talent, creativity, and imagination with examples of actual work. Barrett (2000) describes electronic portfolios as‘(those that make) use of electronic technologies that allow the portfolio developer to collect and organize artefacts in many formats (audio, video, graphics, and text). A standards-based electronic portfolio uses hypertext links to organize the material to connect artefacts to appropriate goals or standards. An electronic portfolio is not a haphazard collection of artefacts (i.e., a digital scrapbook or multimedia presentation) but rather a reflective tool that demonstrates growth over time’.

In education, a portfolio has come to be defined as a purposeful, systematic pro cess of collecting and evaluating work samples to document progress toward at taining learning targets addressed either in state and/or national standards or by learned societies. Defined in this way, a portfolio has several essential characte ristics. An electronic portfolio, also known as an e-portfolio or digital portfolio, is a digitized collection of artefacts, including demonstrations, resources, and accomplishments that represent an individual, group, community, organization, or institution. This collection can be comprised of text-based, graphic, or multimedia elements archived on a Web site or on other electronic media such as a CD-ROM or DVD.

A portfolio is purposeful. There is a clear reason why certain items should be i ncluded and how the portfolio is to be used. Most important benefit of electronic portfolios is that they are more accessible than paper-based portfolios. They provide easy access to the stakeholders either over the Web or through other technological media like the video, or CD-ROMS etc. Students do not have to invest in bulky storage systems and can access their portfolios

from anywhere while their teachers from other disciplines can also access the portfolios and check on the students' learning processes. Students can also show their electronic portfolios to prospective employers when interviewing for jobs.

Teaching portfolios have become commonplace in many teacher preparation programme as a means to measure teacher candidates' readiness to teach. Borrowed from other professions such as art, photography, fashion, advertising, and architecture, portfolios historically have comprised 'best practice' samples of professional work organized into various storage vessels including folders, containers, and attaché cases (Bird, 1990). The *teaching* portfolio, while building upon such previous uses, expands the boundaries of the best practice focus when incorporated as a tool with which to capture the complexity of learning to teach. While much of the research literature focuses on the more traditional paper and pencil format of teaching portfolios, the increased integration of technology into the teacher preparation curriculum has influenced the rise of the electronic portfolio format (Barrett, 1998). Electronic portfolios, or e-portfolios as they are commonly labelled, are similar in many respects to paper and pencil format portfolios in that the contents are similar (e.g. lesson plans, student work samples, assessment tools), they are aligned with a purpose (e.g. growth and development, standards driven, certification), and the artefacts included in the portfolio represent a variety of experiences over time (e.g. fieldwork, coursework, workshops). However, characteristics specific to e-portfolios are many and are important to address when considering their implementation with pre-service teachers.

Research to date documents a variety of outcomes attributed to using portfolios in pre-service teacher preparation programs. Portfolios can promote reflective practice and thereby become reflective in nature (Lyons, 1998), facilitate self-

directed inquiry (Grant & Huebner, 1998), document student learning, growth, and development over time (Barton & Collins, 1993), and inform programmatic and institutional assessment (Dollase, 1998; Snyder et al, 1998). Additionally, the National Board for Professional Teaching Standards in the US uses portfolios as part of an assessment system to nationally certify professional teachers. Teaching portfolios are used by state departments of education to fulfil re-licensure requirements, by school districts to evaluate and hire new teachers, and by K-12 schools as a means of professional development and/or alternative assessment of in-service teachers (Montgomery, 1997). Furthermore, portfolios are being used as a means to improve college and university teaching (Zeichner & Wray, 2001). Generally speaking, there are two types of electronic portfolios. The first involves using a commercial product where a vendor provides a framework for the storage and retrieval of student artefacts and reflections and provides storage space for data storage and retrieval. The second type of electronic portfolio involves the digital creation, storage, organization, and presentation of portfolio artefacts via a range of generic technologies including word processing, multimedia authoring tools, portable document format (PDF) files, and web logs, to name a few resources. This second type of electronic portfolio uses a variety of digital storage options including CDs and disk drives, or utilizes online storage space provided by the institution (Gibson & Barrett, 2003). Commercially developed systems provide a specific structure or framework for students to
display artefacts and link their content to pre-determined sections aligned with institutional and program goals (Wilhelm et al, 2006). For example, some institutions elect to customize their portfolio system by structuring the portfolio around institutional, state, or national teacher education standards that serve as the portfolio's table of contents. These standards are made into hyperlinks allowing the viewer to move around the portfolio viewing portfolio artefacts specific to individual standards depending on the link activated. Alternatively,

some institutions elect to develop their own electronic portfolio system using readily available media tools (e.g. word processing software, multimedia authoring tools, web authoring software) that allow for a more customized organizational structure, or template, of artefacts and visual format. The institution can elect to use teacher education standards as an organizational framework or, alternatively, primary concepts representing teacher knowledge and skills can be used as the portfolio's table of contents. For example, the portfolio could contain five main categories, including one reserved for personal and professional information (e.g. curriculum vitae, university transcripts, educational philosophy statement), one reserved for evidence specific to work in classrooms (e.g. lesson plans, curriculum units, student work samples, assessment tools), one reserved for evidence specific to meeting the needs of all students (e.g. lesson adaptations, lessons integrating a variety of instructional strategies, differentiated assessment strategies and tools), another reserved for evidence specific to working with families and communities (e.g. class newsletters, parent communication tools, evidence of integrating families and community members into curricular and classroom activities), and the final category reserved for evidence specific to meeting the teacher education standards. As viewers click on the hyperlinks of each main category, the portfolio reveals a variety of artefacts that can be further viewed by clicking on additional hyperlinks.

1.1 Benefits

Online or electronic portfolios offer unique benefits to teaching portfolios that are not available with the traditional paper and pencil portfolio format. One of the primary strengths of the e portfolio format is the versatility that the technology brings to the development and review of the portfolio product. Electronic portfolios are housed in the primary medium within which the portfolio's design, creation, and production take place, in addition to providing

the point from which distribution, access, and review are made possible. In other words, when creating an electronic portfolio all of the design work takes place within a program or template designed to support the development of the portfolio product itself. This development environment allows the teacher education student to create the portfolio within the framework of its final format while at the same time making adjustments to content and organization relatively easy. Another benefit to working within the e-portfolio format is that the format itself provides a more seamless and holistic review process. Rather than working linearly through the often-artificial divisions of a traditional paper and pencil portfolio (e.g. separate sections for lesson plans, assessment tools, teacher standards), the reviewer can move between and within sections with ease by clicking on hyperlinks throughout the portfolio. For example, an educational philosophy statement could include a variety of hyperlinks specific to various viewpoints on teaching and learning (e.g. assessment, working with diverse student populations, working with families, classroom management). While reading this statement one could choose to click on a hyperlink connected to assessment that might bring up a more formal statement on the importance of assessment, which in turn would contain additional hyperlinks and text connected to specific artefacts demonstrating the student's knowledge and skill of assessment. Clicking on one hyperlink might reveal the assessment section of a unit plan that incorporates a variety of assessment strategies, another hyperlink might reveal a rubric or teacher-created test, and a third might reveal a variety of student work samples accompanied by reflective statements. Moreover, the enhanced media possibilities, like including images, audio and video clips, and links to additional resources, provide a richer, arguably more authentic, and more complete picture of teacher candidates and their readiness to teach than do traditional paper-based portfolios. For example, the possibility of including audio and video clips in an e-portfolio has not only expanded the types of artefacts that can be included in a portfolio, but has also

allowed for pre-service teachers to provide important contextual information that accompanies and enhances text-based artefacts and analyses of self-performance. Audio clips can provide spoken analyses that link different sections of a portfolio, add anecdotal evidence or reflective statements to the portfolio, and so on. Video clips – showing the student teacher teaching a lesson, working with a small group of students, conferencing with the supervising teachers, etc. – provide a form of evidence that allows the viewing of a real-time teaching or other relevant event. Both options provide increased contextual information specific to a given evidence sample while offering focused reflection on specific classroom events. For example, a final-year teacher education student might include a video clip of her teaching a lesson on poetry, while an audio clip of her students reading their poetry as a result of this lesson is included in this same section. Within the same portfolio, another audio clip replaying the teacher conferencing with a student could be included.

Since electronic portfolios are created in a digital format they offer the possibility of providing online support to pre-service teachers during the development phase of the portfolio, too. This feature can enable pre-service teachers and faculty supervisors to engage in online discussion of selected artefacts, ‘permitting scorers to comment on whether a particular teacher candidate’s interpretation of fact or method is defensible and appropriate’ prior to the portfolio being submitted by the student (Pecheone et al, 2005, p. 171). In a University of California pilot study, teacher candidates cited ‘the capacity to get supervisor feedback online while still working on the portfolio’ as the most valuable aspect of the electronic portfolio format (Pecheone et al, 2005, p. 173). This collaborative support and scoring process also has the potential to raise the reliability of electronic portfolios with respect to ensuring students understand the task and are given space within which to explain and perhaps justify the selections included in their portfolios. This is an important feature to

consider since research indicates that issues of validity and reliability (lack of clear evaluation criteria, tendency to rate the visual impact of the portfolio rather than its content, and recognition that some portfolio items may not reflect the author's actual ability in the classroom), coupled with cost and time concerns, have hindered a broader acceptance of performance assessments for pre-service and in-service teachers (Melnick & Pullin, 2000; Youngs et al, 2003). The option of working on the portfolio within a variety of physical environments (e.g. on campus, at work, at home) is another benefit to be had from the e-portfolio format. Any computer with access to an Internet connection, the capacity to house the electronic portfolio production program and/or template, and the capacity to view large video files can be used to create the portfolio. And, unlike paper and pencil portfolios, electronic portfolios do not require the gathering and carrying of large amounts of paper documents during the production process. Most artefacts are created electronically; thus, they can be accessed via external storage devices such as computer files, document attachments, CD-ROMs, and flash drives. This technological component allows for greater flexibility specific to time and location when creating electronic portfolios (Pecheone et al, 2005). A key reason for selecting the electronic portfolio format is for the purpose of archiving and retrieving student and institutional data (Wilhelm et al, 2006). Electronic portfolios offer a solution to the concern regarding the physical space needed to store traditional notebook portfolio formats for long-term program evaluation purposes. Electronic portfolios can be stored on internal or external storage devices such as hard drives, videotape, Internet or Intranet sites, institutional networked drives and servers, CDs, and flash drives, thus virtually eliminating the concern for a bricks and mortar storage space. In addition to more or less solving physical storage issues, electronic portfolios are portable, easily reproducible, and widely distributable, which allows for the simultaneous review, evaluation, and storage of multiple copies (Barrett, 1998). In other

words, a faculty member can be viewing a copy of the electronic portfolio in their campus office while at the same time a prospective employer is reviewing the same portfolio across town or across the state. The only limitation to simultaneous and multiple review options is limited to the number of digital copies made; viewing online portfolios is only limited to the granting of permission via password access, thus eliminating the constraints of location or time.

1.2 Challenges

For all of their benefits, electronic portfolios are not without challenges. The primary and most obvious barrier to the successful integration of electronic portfolios into a teacher preparation program is that which provides the most benefits: the technology (Pecheone et al, 2005; Wetzel & Strudler, 2005; Wilhelm et al, 2006). The wide range of digital technology skills and proficiencies usually found among pre-service teachers and faculty can be a difficult and time-consuming hurdle to overcome when considering electronic portfolio production. Institutions must consider how best to provide needed training and support to both students and faculty and how best to develop the infrastructure to sustain this effort over time when deciding whether to implement electronic portfolios. Students with strong technology backgrounds are at a distinct advantage over those who are novice technology users. Navigating the technology challenges of uploading files and digital images and linking to online sources can be a daunting and frustrating task. These challenges can include compatibility issues between the file format of a student-produced video clip and the default media player within the e-portfolio environment, knowing how to troubleshoot HTML code in order to fix hyperlinks or text formatting online, knowing how to record and edit an audio file, or knowing how to change the file size of images to help minimize upload and download times, as just some examples among many. While many of

today's university students are comfortable using information and communications technologies to produce written documents for classroom assignments, for entertainment, and for communication, the skills and understandings required to produce an electronic portfolio may not be within every student's repertoire. The same is true for faculty who work with students as the electronic portfolio is being created, as well as for those who are responsible for reviewing and assessing the completed portfolio specific to programmatic criteria. Members of the faculty with limited technology ability or interest are less able to provide needed technical support to students during the development stage. Moreover, faculty who are not comfortable with using digital technology might be less willing to buy in to the electronic portfolio concept, thus jeopardizing the successful programmatic implementation of the portfolio overall. Skills faculty might need include using peripheral technologies such as scanners, digital cameras, and digital video; the ability to upload and edit artefacts and create hyperlinks; and knowledge of how to access, navigate, and provide comments on individual portfolios. Traditionally, teacher education institutions have tended to focus much of their effort on providing technical training and support to students. Unfortunately, support needed by faculty can be less of a priority. Moreover, providing initial training on new systems and equipment to both students and faculty is less of a challenge than that of providing more difficult, albeit more important training and support, on a regular and ongoing basis (Wilhelm et al, 2006). Varying levels of technology ability require multiple levels of sophistication for training and support, as well. With interest generally at its highest at the onset of new technology use and initiatives, maintaining a focus on the need to continually update one's technology ability wanes as time progresses, thus increasing the institution's challenge to provide support to those working with the e-portfolio initiative. In addition to the challenge of providing training and support, the issue of access to required technology is also a challenge when considering

implementing e-portfolios. Not all students and faculty have access to the types of technology and peripherals (e.g. scanners, video cameras, audio recording equipment) needed to create an electronic portfolio at home, which may ultimately limit the benefit of flexible work locations previously discussed. Moreover, home computer technology might not have the capacity to upload and view large files or might have an inappropriate screen size for viewing portfolio documents effectively (Wetzel & Strudler, 2005). If the institution has chosen a stand-alone commercial software package that supports the development of the e portfolio, such programs can be cost prohibitive for students and result in another challenge to students who wish to perform the majority of their portfolio development work from home, rather than using freely available software within campus computer labs. Similar challenges are faced by faculty when providing support or performing assessment reviews off campus, too. With home computer use also comes the challenge of providing students with technical help specific to digitizing, compressing, and uploading large text, video and audio files. The variety of computer platforms, difficulties with clearly communicating and understanding technology needs, and the difficulty of providing long distance troubleshooting support adds to the technology challenges faced by students, faculty, and the institution (Pecheone et al, 2005). Such concerns often result in students doing some if not the majority of their portfolio development work on campus. Thus, access is also an issue for on-campus use. Campus computer labs are in demand by all members of the university community, which can result in limited access to computers and required peripherals for those working on e-portfolio development. The number of available computers and needed peripherals is compounded during end of semester ‘crunch time’. Moreover, working with a commercial software program often delegates the availability to a small number of dedicated on-campus computers or lab sites. As with any portfolio format, the purpose of the portfolio must be clearly defined and understood by

students and faculty in order for electronic portfolios to serve a useful educative and/or evaluative purpose. The purpose of the portfolio provides the focus in regard to the design, content, evidence selection, and presentation of the portfolio (Barton & Collins, 1993; Simmons, 1996; Zidon, 1996; Wolf & Dietz, 1998). For example, students might believe that the portfolio is solely designed for employment purposes, resulting in the selection of best practice examples of their knowledge and skills, while at the same time the university conceives the portfolio as a way to measure whether students meet the teacher education standards. These divergent purposes would result in different types of artefacts selected for inclusion (exemplary work vs. work done over time coupled with reflective growth statements) and different organizational strategies (reflective narratives vs. stand-alone artefacts). A clearly defined purpose provides needed guidance to students and faculty, which in turn helps to create an atmosphere of focus and benefit as portfolios are implemented across certification programs. However, without a defined and clearly articulated purpose, the entire process is at risk of turning into a meaningless and frustrating assignment for both students and faculty involved. Students can get frustrated if they do not understand why they are creating a portfolio, what is expected as far as content and format are concerned, how it will be assessed, and how it contributes to their development as beginning teachers. Faculty can get frustrated with the addition of a time-consuming process of portfolio review and assessment if they are unsure of what they are supposed to be looking for, the criteria they are to use for evaluation, and how the portfolio will be contributing to student and institutional knowledge.

1.3 Three main types of e portfolios:

- Developmental (e.g., working),
- Reflective (e.g., learning), and
- Representational (e.g., showcase).

A developmental e-portfolio is a record of things that the owner has done over a period of time, and may be directly tied to learner outcomes or rubrics. A reflective e-portfolio includes personal reflection on the content and what it means for the owner's development. A representational e-portfolio shows the owner's achievements in relation to particular work or developmental goals and is, therefore, selective. When it is used for job application it is sometimes called Career portfolio.

The three main types may be mixed to achieve different learning, personal, or work-related outcomes with the e-portfolio owner usually being the person who determines access levels. If implemented well, e portfolios can encourage reflective practise and self evaluation. They can cater for a wide range of learning styles. Students have different learning strategies and e portfolios can support this diversity. They enable evidence from a number of different aspects of the curriculum and learning process to be brought together in one space and can provide a frame work for formative and summative assessment.

Academic portfolios are gaining prominence in educational leadership programs. An academic portfolio is a "living document" that contains thoughtfully selected artefacts and accompanying reflections indicative of lessons learned in an academic program, based up on established set of proficiencies, competencies or concepts.(Brown & Irby,1999). An academic portfolio enables faculty in leadership preparation programs to review not only the progress of their students, but also what students believe to be significant contributions from their course work to their futures as principles. Additionally faculty are able to determine strengths and weakness in their programs by analysing the portfolios as they relate to program objectives. Students are much more benefited from the portfolios. Some of the benefits include

- Provides students with an authentic evaluation
- Documents students' growth
- Identifies strength and weakness in students
- Documents progress towards established benchmarks related to standards.
- Allows for reflection on progress within the program
- Provides the student with ownership over his/her own learning.
- Allows for expectations to be understood by all.

Educational leadership preparation program benefits are derived because the e portfolio process

- Assists the faculty in assessing and evaluating the students and the program.
- Includes ongoing assessment
- Encourages communication among faculty members and between faculty and students.
- Promotes reflection on the purposes of the program
- Offers a structure for monitoring program components.
- Provides a standardised means of evaluating reflections and artefacts.
- Documents student growth.

1.4 Theoretical Perspective

Portfolios rest on a continuum from more objectivist to more subjectivist philosophical approaches. The objectivist approach is based on the belief that outcomes can be precisely described and that an independent evaluator can measure observable behaviors. The subjectivist perspective is based on the belief that learning is complex, situated, and individual and must be judged by experts directly involved in teaching and learning (Gray, 2002). The objectivist approach lends itself to a skills-based assessment, and the subjectivist approach is more constructivist in nature and lends itself to a reflective practitioner model (Schon, 1983). The former emphasizes the assessment of learning, and the latter emphasizes the assessment for learning (Stiggins, 2002).

Assessment portfolios

Other approaches to portfolios, based on an objectivist philosophy, are primarily designed to meet the needs of the programs or institutions (Barrett 2004; Fagin, Hand, & Boyd, 2003). Here students are expected to provide artefacts that demonstrate that they meet state and national performance standards. Instructors often use rubrics to evaluate the prescribed items. Individual artefacts in the portfolio or the portfolio as a whole may be required to address not just the top-level standards, but also sub-elements consisting of an array of performance objectives. Willis (2009) refers to this as an atomistic approach. In such assessment portfolios, standards and evaluation rubrics provide direction for artefact selection and organization of the EP. Students thus create these portfolios to satisfy outside readers. Colleges of education aggregate and disaggregate the evaluation data to demonstrate that teacher candidates within the program are meeting the necessary standards. They also use the data to inform where improvements may be required.

The Effect of Teaching Portfolios on Pre service Teachers

Student portfolios have been used in teacher education programs for some time, and are generally thought to have positive effects on learning. For example, some researchers have concluded that through the use of portfolios, teacher candidates understand the teaching profession by reflecting on assignments and their alignment of standards with artifacts, engage in the process of self-assessment, design professional growth plans, and participate in the final evaluation of their teaching portfolios (Campbell, Cignetti, Melenyzer, Nettles, & Wyman, 2001). In a study of 10 teaching interns and first and second year teachers, Lyons (1998) discovered that nearly all of the students

found the process of constructing a teaching portfolio “an important and significant reflective learning experience” (p. 255).

These researchers describe portfolios that Wolf and Dietz (1998) would categorize as learning portfolios, having the purpose of promoting reflection and “ownership of the learning process” (p. 15). They identify two other types of portfolios: the assessment portfolio, which “presents educational organizations with information about a teacher candidate’s effectiveness,” and the employment portfolio, which “provides prospective employers with information about a teacher’s suitability for a position” (p. 15). These different purposes drive the structure, contents, and format of the portfolio.

Student Learning through Reflection.

Reflection is a key element of the learning portfolio (Shulman, 1998; Zubizaretta, 2004). “With reflection, the portfolio can become an episode of learning; without reflection, the portfolio may be little more than an exercise in amassing papers” (Wolf & Dietz, 1998, p. 14). Wiseman (2004) made distinctions between types of reflection: critical reflection that is based on a commitment to personal growth and reflection that is guided by external mandates such as proving competence according to others’ criteria. However, external mandates such as standards-based electronic work samples can be meaningful, if students received proper guidance and if teacher educators align program philosophy, purposes, and assignment. Further, Wiseman (2000) pointed out that teacher educators needed to guide pre service teachers to reflect and electronically represent the professional, psychological, socio-historical, political, ethical, and moral aspects of themselves as educators. In addition, Lyons (1998) explains that one view of reflection is the justification of teachers’ actions by offering rationales and reasons. Another view is that of making connections. In the latter view, students tell the story of practice and in dialogue student string together strands of connections.

Finally, Stone (1998) added that reflection is a process that needs to be nurtured in students and developed. The reflective process can be taught. In a study of reflective statements in the electronic portfolio of 10 preservice students, Robbins (2004) analyzed their reflective statements. Students were taught a specific process for reflection using the Reflection Cycle (select, describe, analyze, appraise, transform). Robbins found that students focused on their emergent personal theories of education and their future plans and concluded that the Reflection Cycle approach did support the reflection of preservice teachers. Finally, the reflections were more focused on teachers (self and survival) than on students in their classes.

Technology Skills.

Creating EPs may also enhance students' technology skills. Surveying 26 students who created EPs in the first year of their teacher education program, Bartlett (2002) explained that students created EPs that included teaching standards, two lessons, and video clips of the implementation of a lesson. She found that students identified learning about technology as the greatest benefit, but also that the student time devoted to the electronic portfolio was extensive. Students spent seven class periods building their EPs, and they also spent many hours out of class working on them. Many students commented that the project was time consuming and expressed the desire for more time to work on it.

Similarly, Piper analyzed 12 preservice teachers' responses to open-ended interview questions, and found that most said they improved their technology skills by creating their EPs. Technology skills that students mentioned most often in the interviews were: HyperStudio authoring, HTML skills, scanning/video/audio capture, and cut/paste/transfer of files. Most of the problems students experienced related to digitizing artifacts and

troubleshooting hardware and software. After students designed and implemented their EPs, Wright, Stallworth, and Ray (2002) surveyed them and found that 88% thought the additional technology elements integrated into the methods block to create their portfolios were worthwhile.

2. Definition of Key words

Information system

System consisting of the network of all communication channels

-used within an organization.

Electronic

Using the methods or principles of electronics as part of the working mechanism; - of devices; as, electronic circuit; electronic devices; electronic entertainment devices.

Portfolio

A selection of a student's work (as papers and tests) compiled over a period of time and used for assessing performance or progress.

Knowledge

Information, understanding, or skill that you get from experience or education.

Generation

To produce (something) or cause (something) to be produced.

Sharing

To let someone else have or use a part of (something that belongs to you).

Teacher

A person or thing that teaches something; *especially* : a person whose job is to teach students about certain subjects.

Professional

Relating to a job that requires special education, training, or skill.

Development

The act or process of growing or causing something to grow or become larger or more advanced.

3. E – portfolio system developed

We are proud to introduce an electronic portfolio system in our college (Peet Memorial Training College, Mavelikara, Kerala), which is first time in India by making the teaching professionals involve in creating their own portfolios, through which they can upload their project works, teaching philosophies, class room videos, lesson plans and much more. The purpose behind this creation is not only to make the students engaged in an e-environment which is quite unfamiliar to most of them but also to assess their skills and ideas relating to the teaching field and get proper feedbacks on their posts.

The proposed portfolio system includes eleven B.Ed. colleges in Kerala. All the student teachers from these participating colleges are provided with their e-portfolio accounts in which they are advised to upload their intellectual works and activities. These uploaded works will be evaluated under the guidance of teaching experts using various assessment rubrics and proper feedback will be provided to the student teachers. Based on the feedback of the experts, students can make improvements on their works. This portfolio account will also serve as a recruiting platform for the teaching professionals, as their profile will be viewed by employers who register with the system. Thus employers can view the resume, works uploaded by the student teachers and even their teaching videos which help the recruiters in assessing the teaching skill of a particular student teacher.

Portfolios can be used simply to store and organise information, For example, e portfolios can allow students to arrange materials for assessment. However, e portfolios are not simply repositories and can be to support reflections on assessment outcomes. The construction of a student portfolio by a student

teacher in a teacher education programme is now universally regarded as an essential step in the process of teacher certification. The idea of building a teacher portfolio came from Lee Shulman who was a professor at Michigan State University in the 1970's and deeply involved in research on teaching.

System features

Combines..

Social networking site *(interactivity)*

+

Job site

+

Professional development site *(knowledge sharing)*

Copyright policy

- We encourage open content licensing.
- It is made sure that the works uploaded is not pirated or copied from any other sources.
- All the works uploaded, including video can be used for teaching and learning.
- Proper references must be given for the use.

3.1 Objectives

1. To study/analyze the possibilities of information and communication technologies/technology tools for professional development of teachers of all levels.

2. To develop online interaction platforms for learning, assessment, and professional growth of pre-service and in-service teachers.
3. To develop information system for e-portfolio based knowledge generation and sharing for professional growth of teachers.
4. To equip pre-service and in-service teachers of all levels to create and use e portfolios to professionalize teaching and learning.
5. To build a digital multimedia database for web based data management
6. To help minimize the 'digital divide' of deprived sections of teachers like, women teachers, rural and remote working teachers by providing necessary ICT inputs and support.
7. To provide government and non governmental agencies with teacher data in their efforts to improve the quality of education of various levels.

Recently there are wide spread attempts worldwide, especially in higher education, to use ICT as a major tool for the professional development of teachers. Many universities are keen to develop E-portfolio as a tool to track the professional development as well as assessment of both novice and expert teachers. The major advantage of e-portfolio is that a large number of ICT tools can be integrated in an e portfolio which makes it a versatile interactive digital system for a number of academic purposes. Generally e portfolios are used as tool to showcase works and skills of students for job hunt or career prospects. There are attempts to use e portfolios for assessment also. Interaction and collaboration play a very crucial role in the learning process. It is also true that in the teaching learning process, a huge amount of knowledge is generated which is not utilised or shared. It is envisaged in this project that e portfolios can act as a platform for facilitating interaction and collaboration, generating and sharing knowledge, assess and grade learning, help people develop professionally through reflective learning and utilize the database created during the portfolio development process.

3.2 The power of reflection

We freely use words such as reflections as a part of our daily discourse, and assume that we all share in the meaning of the word. If pressed to define what Robertson may have meant by the term 'shallow reflection', each one of us might come up with a different explanation. Reflections are a big part of teachers' portfolios for a numerous reasons. They reveal a teachers' ability to connect with their students. The artefact itself is used as a starting point for the reflective process. It is a common practice for the teacher education programmes to require candidates to gather artefacts for each standard adopted by the programme and write a reflection on the artefact being submitted. Reflections serve as opportunities for learning. Indeed, without reflection no knowledge is created.

Reflections, for the purpose of a career advancement portfolio, are written accounts of the engagement in thoughtful and careful analysis of past practices and experiences with the transformation of the analysis into a future action or goals.

4. Artefacts

Artefacts and reflections are the heart of the career advancement portfolios. It is in this section that the students will provide concrete examples of the leadership accomplishments or experiences that qualify them for the position and will, through reflections on those accomplishments, demonstrate the expertise and ability to analyse the impact of their actions and determine necessary steps in their growth as a leader.

Once you have a sufficient collection, you will begin the all important selection process. Because of time constraints of reviewers, it is essential to limit the

number of artefacts that are to be included in the e portfolio. This is definitely a situation in which less is more because we are aiming for quality, not quantity. The students are supposed to upload only selected artefacts for each given assignments, and it is critical that students select those items that best demonstrate their leadership competence, showcase their accomplishments, and attract the attention of potential employers. The reflection cycle offers helpful prompts for artefact selection. Given below are the various artefacts in this e portfolio system.

4.1 Various artefacts

1. Personal details including resume
2. Professional works :-

- **Project/practicum**
- Teaching philosophy.
- Reflective journal
- **Lesson plans**
- **Teaching video/ audio files**
- Creative works

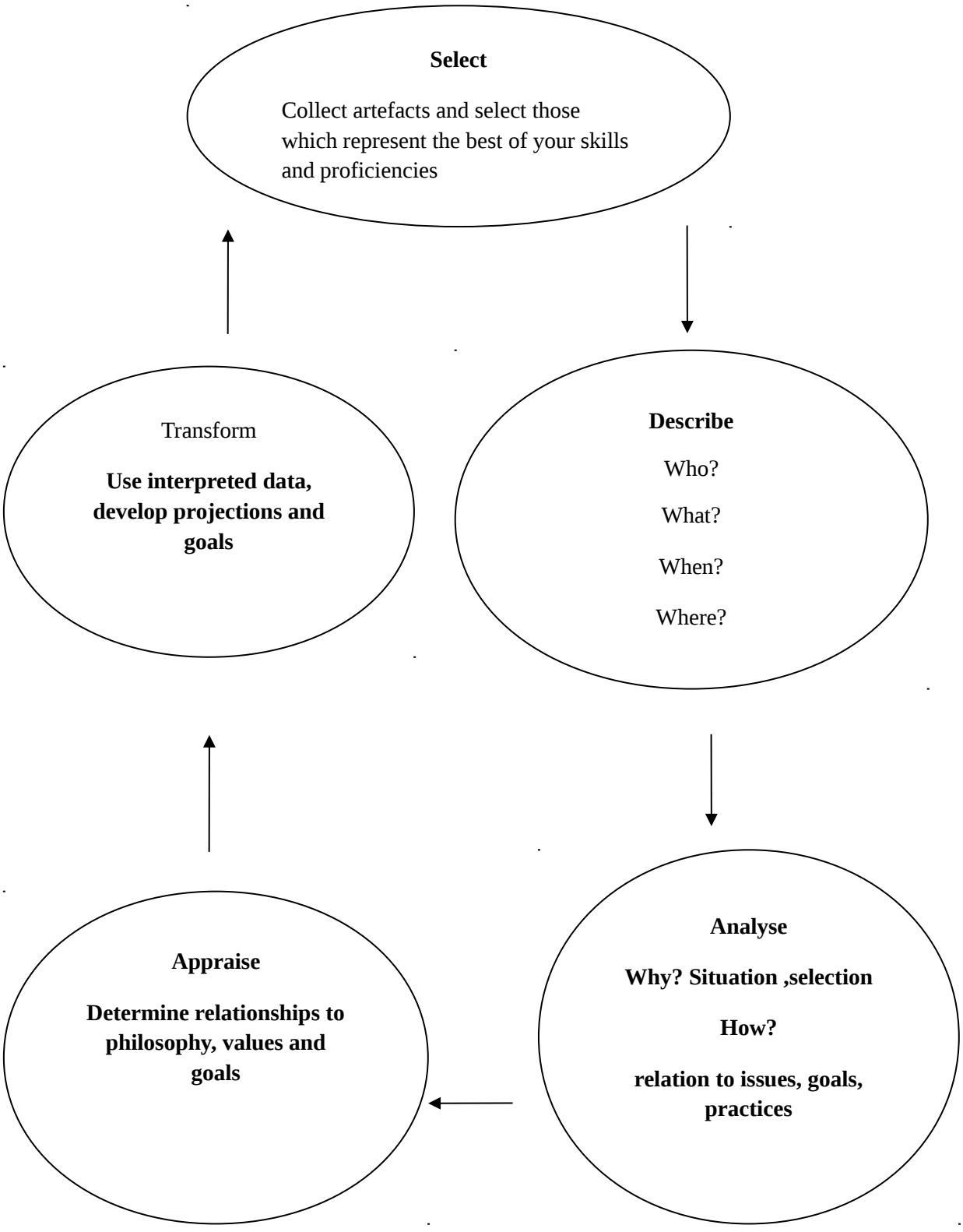
Select
Collect artefacts and select those which represent the best of your skills and proficiencies
Describe
Who?
What?
When?
Where?
Analyse
Why? Situation ,selection
How?
relation to issues, goals, practices
Appraise
Determine relationships to philosophy, values and goals
Transform
Use interpreted data, develop projections and goals

Figure 1. The reflection cycle

4.2 Reflective Journal

A student-teacher generated locally standardized daily log book maintained under the supervision of the mentors is visualized as a Reflective Journal (RJ). The RJ can act as a document that carries an analytical account of the daily experiences of Student-Teachers during practice-Teaching. The major purpose of the Reflective Journal is Reflection on-Action. All student teachers were asked to maintain a reflective journal and were assessed on the basis of the style of writing, the vastness of the matter dealt with and the experience they gained each day.

5. Review of Literature

Sherry, A. C., & Bartlett, A. (2005) studied two groups of education majors--23 undergraduates and 14 educational technology graduate students--provided perspectives about their electronic portfolios. Two investigators independently directed them, evaluating the process from students' perspectives, including holistic evaluations by departmental faculty. Survey data were framed within Kirkpatrick's Levels of Evaluation with worth expressed on four levels as attitudes, learning, planned job usage, and potential organization impact. Despite different technological capabilities and limited similarities in implementing the process, both groups primarily viewed electronic portfolios as worthwhile overall, being largely positive on three levels. Systemizing the process is suggested. Technological ability, overall, was not a major factor.

Campbell, M. I., & Schmidt, K. J. (2005) noted that portfolios and other assessments of student achievement are proving to be important topics of concern in engineering education. While portfolios have a long history in other

disciplines, their use in engineering is fairly new. This paper provides a case study on the development and implementation of electronic portfolios in engineering education through our Polaris system built specifically for undergraduate engineering students. The end goal of Polaris is to provide students with a presentation of their academic accomplishments in a variety of multimedia formats on a professional looking website. While there are many web-development tools for creating a portfolio, the distinguishing characteristic of Polaris is that it specifically engages engineering students in developmental exercises to help them understand their budding professional skills. This case study provides background history and reveals issues that are germane to creating a developmentally appropriate resource to enhance engineering students' scholastic experiences.

Tosh, David et al.(2005) found that much of the evidence and research available on the use of e-portfolios focuses on faculty and institutional perspectives and/or consists mainly of anecdotes about how useful the e-portfolio has been to learners. While it is generally agreed that e-portfolios have great potential to engage students and promote deep learning, the research that has been conducted to date focuses very little on student perceptions of value of the e-portfolio for their learning. If students do not accept the e-portfolio as a holistic means with which to document their learning in different contexts and more importantly, agree or wish to use the e-portfolio as an integral part of their educational experience, then the potential impact the e-portfolio will have on learning will not be realised. This paper highlights four themes arising out of research that is underway within an international framework of collaboration between the University of Edinburgh, the University of British Columbia and the University of Waterloo.

Smits, H. et al.(2005) through this paper describes the first stages of a project focusing on the use of pre service-teacher-generated e-Portfolios as a means of documenting and assessing inquiry-based teaching and learning. The project is designed to explore ways in which pre service teacher-created e-Portfolios can be used to (1) document how inquiry lives in practice, and (2) help university instructors and practitioners in the field assess the knowledge, skills, and attributes of pre service teachers who are participating in an inquiry based teacher preparation program.

Love, D., McKean, G., Gathercoal, P. (2004) argue that webfolios may have the most significant effect on education since the introduction of formal schooling. When fully matured and implemented by capable professional educators throughout every discipline in an educational institution, webfolios promise a viable alternative to current, high-stakes testing, which focuses education on test-taking rather than teaching and learning. The promise webfolios hold—a richer educational experience for all—will not be realized, however, unless educators embrace webfolio concepts and apply them at their highest level of maturation. This will take time because institutions and educators must systematically work through five stages before arriving at the point where authentic evidence—such as that provided by fully implemented webfolio systems—replaces high-stakes testing as authoritative evidence for assessment, evaluation, and reporting.

Ellsworth, J. (2002) documented an elementary school that implemented student portfolios as port of a comprehensive school reform effort. Findings indicated that portfolios were an important mechanism through which teachers came to deeper understanding of their professional practices. Teachers began to recognize changes in classroom practice and school-wide responsibilities and

to identify organizational structures and professional development opportunities necessary for the inquiry and reform process.

Di Biase et al. (2002) offer a view of the development of a portfolio from simple collection of materials, through selection, reflection and projection of final presentation. They emphasise the value of each of the stages, giving a 'feel' for the purpose of the portfolio, an idea of how it links with learning.

Foote, C.J., & Vermette, P.J. (2001) emphasize the need for the initial creation of teaching portfolios during introductory and foundation level education coursework, based on the constructivist perspective of learning. Early initiation to the portfolio process instils a reflective practitioner orientation and learning goal in teacher candidates. Recommendations are made regarding the content of these early portfolios and the use of a reflection process that connects each submission with an intended goal. The authors discuss the necessity of field experiences in relation to portfolio development and offer suggestions for reviewing and evaluating introductory portfolios.

Zeichner, K. & Wray, S. (2001) examined the use of teaching portfolios in pre service teacher education programs, analyzing the various ways in which portfolios have been conceptualized and implemented. The paper proposes a conceptual framework to enable researchers to describe the conditions of portfolio use and discusses key issues that have emerged in the use of teaching portfolios in pre service teacher education.

Kariuki, M. T., Sandy (2001) conducted in depth interviews to investigate how the pre service teachers used the laptops and the impact of this use. Each pre service teacher worked together with an elementary pupil to develop an electronic portfolio for the pupil. Findings indicate that laptops computers are

indeed a viable means of achieving several goals at the same time. These include giving pre service teachers quick access to technology, providing them an opportunity to develop confidence in the integration of technology in teaching, providing elementary pupils with an opportunity to become comfortable and effective participants in the information age, and providing classroom teachers with an example of how technology can be used. The findings suggest that providing an opportunity to practice using technology with elementary pupils in a nonthreatening setting is one solution to the search of "what works" in preparing teachers who are willing and able to integrate technology in their own classrooms. The study recommends the use of a project-based approach, such as electronic portfolios, when pre service teachers are provided with access to technology.

Hebert, E. (2001) claims that standardized tests identify the most knowledgeable child, whereas student portfolios can identify the knowledge level of each individual child. In The Power of Portfolios, Elizabeth A. Hebert offers a practical and imaginative approach for using portfolios with elementary level students and shows how the portfolio process can serve as a powerful motivational tool by encouraging students to assess their own work, set goals, and take responsibility for future learning. Throughout the book Hebert relates stories that illuminate the lessons learned -- by the students, teachers, and principal -- from a school that has used portfolios for more than a decade. Rather than prescribing what the portfolio should contain and how it should be assessed, she offers practical guidance, including classroom exercises, for making the portfolio experience a success for the students, the teachers, and the school as a whole.

Russell, J. & Butcher, C. (1999) describes the evolution of student evaluations. Traditionally a major, if not the sole, method of student evaluation was a paper-

and-pencil test. In the past some instructors assigned a number of small-scale, disconnected practice exercises. Later they offered a menu of projects of a larger scale. Today the trend is to encourage students to compile portfolios of professional quality work, organized around major themes. The nature of portfolios and their advantages and limitations will be explored. The use of portfolios in two different educational technology courses will be described." In many schools, students are being evaluated on the basis of portfolios that document what they can do in language arts, science, social studies, and other skill areas. Portfolios often include such items as student-produced books, videos, and audio-visual presentations.

Danielson, C., & Abrutyn, L. (1997) through this work describes the three major types of portfolios are working portfolios (collections of work in progress), display portfolios (also called showcase or best works), and assessment portfolios. These types are distinct in theory, but tend to overlap in practice. Once the purpose of the portfolio has been determined, the steps in the portfolio development process are: (1) collection; (2) selection; (3) reflection; and (4) projection. Projection, in the portfolio process, means looking ahead and setting goals for the future. Portfolios are best used in the classroom when they are used as a stimulus for students to produce imaginative and creative work, and when students are encouraged to analyze their own progress and to produce answers to open-ended questions. There are many logistical challenges to the use of portfolios, and it is essential not to undermine their instructional benefits by using them prematurely for high-stakes assessment. Many of the assessment tasks of portfolios can be achieved through well-designed performance tasks. It is the collection and reflection aspects of portfolios that make them such a valuable assessment tool. Some practical suggestions are offered for portfolio management.

Wade, R.C., & Yarbrough, D.B. (1996) identified that portfolios have often been promoted as a tool for reflective thinking, yet few studies have examined the use of portfolios in reflective teacher education programs. This exploratory study uses interviews, essays, and survey data to examine 212 teacher education students' efforts to think reflectively through the process of constructing portfolios based on their experiences in a community service-learning program. Findings revealed that the portfolio process prompted reflective thinking in many, but not all, students. Recommendations for using portfolios in teacher education programs include: focusing attention on students' initial understanding of the process and its purpose, encouraging student ownership and individual expression, providing some structured aspects to balance the open-ended nature of portfolios, and evaluating the portfolio process and students' responses.

Web logging or "blogging"

Another technology that has potential to make electronic portfolios more engaging is the web log or "blogs" as it is known to those who participate in them. David Tosh and Ben Werdmuller of The University of Edinburgh have published a paper online (PDF) entitled, "e Portfolios and weblogs: one vision for e Portfolio development."

A weblog is defined as any web page with content organised according to date. Originally, these were pages keeping track of a user’s discoveries on the newly emerging World Wide Web; later the definition expanded to encompass personal diaries, work-related progress reports and even summaries of current events on newspaper websites.

In the context of an e Portfolio, course tutors, lecturers, clubs and societies could all have their own weblogs which users could view on their “friends” page. Students can share information they’ve found or ideas they have on a

particular subject, as well as the more social messages which may form a compelling reason for them to use the technology to begin with.

6. E portfolio as e- learning

E portfolios are now used to meet a range of learning requirements. The following list may be extended as development occurs:

- Assessment- used to demonstrate achievement against some criteria.
- Presentation- used to evidence learning in a persuasive way, often related to professional qualifications.
- Learning- used to document, guide and advance learning over time.
- Personal development- related to professional development and employment
- Working- combines previous types, with one or more e-portfolios and also a wider archive to provide evidence of learning at work.

Teachers report that the use of portfolios enhances their own teaching, and they credit reflection for their considerable growth (Athanases,1994;Hurst, Wilson & Cramer, 1998; Tierney, 1993). Of additional importance to teacher growth is feedback and mentoring. portfolios serve as a vehicle for providing feedback to teachers so that they may improve their teaching, level of professionalism, and leadership skills (Brown & Irby,200; Doolittle, 1994). Brogan (1995) describes how portfolios may be used to provide teachers with the opportunity to grow professionally in concert with other teachers and in ways that promote the educational institution, districts and student performance standards. Additional benefits for teachers for teachers include a sense of self confidence, empowerment and collegiality (Athanases, 1994; Bull, Montgomery, Coombs, Sebastian, & Fletcher,1994). Furthermore, portfolios encourage collaboration; experimentation; incorporation of available knowledge basis; involvement in

goal setting, evaluation, decision making, leadership etc(Brogan, 1995). Summarily, Brogan concludes that portfolios allow teachers to be in the middle of current efforts to improve the quality of teaching and learning in schools.

7. Issues in developing the portfolio

It is not enough to cite the benefits of portfolio development without recognizing that there are dilemmas in this process.

7.1 Time consuming preparation

One of the major problems in creating the portfolio is that the process is labour intensive and time consuming. Many pre service teachers feel overwhelmed at the thought of having to develop a portfolio. Unfortunately many of the teacher candidates do not bring their collection of evidence until they enter their student teaching semester. The demands and expectations of student teaching compound the stress associated with the development of the portfolio. Many in service and pre service teachers may feel that they need to document everything they have accomplished. This is an unreasonable, self imposed expectation. Identification of a realistic set of professional goals or standards with a small number of artefacts that best support the goals or standards will make the task more manageable.

7.2 Quality of presenting documents

Teachers who are very artistic or have access to superior technical resources are able to easily assemble a visually pleasing and impressive product. This places the teacher without the talent or resources at a disadvantage and may affect the scoring process when the portfolio is used for evaluation purposes.

7.3 Giving training for the users

Giving training for the users, i.e. teacher educators was really challenging because most of them were not well versed in ICT. It needed much time to make the teacher professionals to get involved in this e portfolio system.

7.4 Determining rubrics for assessment

Another major concern is the identification of an acceptable method of assessing then portfolio. The more diverse the documentation, the more difficult it becomes to compare and evaluate the portfolio. Evaluation depends on the professional judgement of the reviewer and is highly subjective (Martin-Kniep, 1999). A solution to this problem that is often chosen is the use of a rubric that includes the aspects of performance to be measured and the criteria for rating those aspects.

8. Setting the stages of e portfolio development

- Collection of materials- Students, with support from teachers, save artefacts (assignments, videos) that represent achievements, successes in their day to day study.
- Selection of materials- students review and evaluate potential portfolio material to identify those that demonstrate the development of particular skills or achievement of specific standards.
- Reflection- Students evaluate or assess their own learning through reflective commentary. They reflect on their own growth and development over time, recognising achievement of goals and standards, identifying gaps in development or understanding and acknowledging skills required further work.
- Projection- Students with the teacher's assistance, compare current achievements or standards or performance indicators. They then set learning goals or develop action plans for the future. This stage links

portfolio development and personal development planning to support lifelong learning.

- Presentation- Students are invited to share their portfolio with teachers and possibly their peers. This promotes collaborative learning, fosters self and peer evaluation and further encourages lifelong learning.

9. Pilot workshop

A one day workshop was conducted on 25/03/2013, in which teacher educators from various colleges participated and evaluation rubrics were developed. Decisions are also made on the portfolio contents and stakeholders. The main purpose of conducting the workshop is to introduce the e portfolio system before the facilitators from the participating institutions and along with it discussions are made on developing the rubrics for the assessment of works submitted by the student teachers.

10. List of participating Colleges in the e portfolio system

- **Peet Memorial Training College, Mavelikara**

  The Peet Memorial Training College, Mavelikara was founded in 1960. The college is affiliated to the University of Kerala, accredited by NAAC, at B+ + level, recognised by the NCTE and offers a one year teachers training course leading to the Degree of Bachelor of Education in six subjects: English, Mathematics, Natural Science, Physical Science, Social Studies and Commerce with sanctioned strength of 150. Masters Degree in Education (M.Ed.) is also being offered from 2005 – 2006.

- **St.Thomas College Of Teacher Education, Pala**

  St. Thomas College of Teacher Education, Pala was established in 1957 as one of the pioneer institutions in the field of teacher education. It is the first teacher education institution to be reaccredited with A+ grade by NAAC

- **St.Joseph College Of Teacher Education For Women, Ernakulam**

St. Joseph College of Teacher Education for women Ernakulam is established and managed by the Carmelite Nuns (Congregation of Mother of Carmel, CMC) consider the upliftment of women and children as their 'Divine Call'. The institution is an important organ of the congregation fulfilling this command at any cost. The college established in 1957 located in the heart of Kochi city, is a minority institution, affiliated to Mahatma Gandhi University, Kottayam. It is owned and run by Vimala Province of the congregation of mother of Carmel (CMC).This edifice of learning and holistic enrichment nestles on 2 acres 31.5 cents calm and serene ground and is a unique blend of the old and new architectural styles.

- **NSS Training College, Pandalam**

N.S.S Training College Pandalam is an aided college affiliated to the University of Kerala and comes under the control of the Zonal Deputy Director of Collegiate Education, Kottayam. The institution is recognized by NCTE. It is accredited by NAAC at B ++ level. The institution has been rendering outstanding contributions to the society ever since its establishment in the year in 1957.The almamater of a number of promising teachers, the institution has been consistently showing excellent academic achievement owing to the dedication and teamwork of the staff.

- **Sree Narayana Training College, Nedunganda**

Sree Narayana Training College, Nedunganda, is the first of its kind founded in 1958 in the name of his Holiness Swami Sree Narayana Guru by the Sree Narayana Trusts, Kollam constituted by the Sree Narayana Dharma Paripalana Yogam popularly known as the S.N.D.P. Yogam. The Managing Committee of the Sree Narayana Trusts together with the Principal as Ex officio member will constitute the managing Committee of this College. This is one among the fifteen post matriculation institutions and the only one teacher education college founded under the auspicious of the Sree Narayana Trusts. Nedunganda is a serene village situated about Six kms to the south of Varkala, a renowed tourist centre in south India, and 2 km to the north of the famous historical place, Anchuthengu. More over nearness to Sivagiri, the Samadhi of His Holiness Sree Narayana Guru, the Universal Guru who propagated “One Caste, One Religion, One God”

- **NSS Training College, Changanacherry**

N.S.S. Training college Changanacherry, Kottayam district , Kerala was established in the year 1954 by Nair Service Society , the biggest corporate educational agency in Kerala. It is an aided college affiliated to the Mahatma Gandhi, Kottayam and is managed by Nair Service Society. The college comes under control of the Zonal Deputy Director of Collegiate Education; Kottayam.The institution is recognized by NCTE and accredited with B++ level by the National Assessement and Accreditation Council.

- **St.Joseph’s Training College,Mannanam**

The College was established in 1957 as a Christian minority institution to train teachers for secondary schools. It was then affiliated to Kerala

University and since 1983 to Mahatma Gandhi University, Kottayam, Kerala. It is recognized by the National Council for Teacher Education and is re-accredited by the National Assessment & Accreditation council. The college has a vast campus spread over 12 acres and 57 cents of land with adequate facilities and resources for various educational programme, administrative functions and extension services. The institution has spacious classrooms, fully equipped science, technology, psychology and computer laboratories, biology museum, guidance and counselling centre, seminar hall, auditoriums, well arranged library, rest rooms, research consultancy centre, work experience and activity room to meet the requirements of M.Ed, B.Ed and TTI.

- **Fathima Memorial Training College,Kollam**

The history of the institution can be traced back to the year 1997. At the time of inception there was an intake of 100 students. At present 170 students are studying in 6 optional subjects. The M.Ed section started functioning in the academic year 2010-'11 with an intake of 25 students. The College has stepped into the final phases of the works for the accreditation by National Assessment and Accreditation Council (NAAC). Our institution provides an exceptional learning environment for prospective teachers that have been instrumental in improving the intellectual, physical, emotional and spiritual realm of the students.

- **Karmela Rani Training College, Kollam**

Founded in 1960 by the late Rt. Rev. Dr. Jerome M. Fernandez, Karmela. Rani Training College is a Teacher Education institution offering Bachelor of Education (B. Ed.) Degree course in seven disciplines and Master of Education (M.Ed.) Degree. The college is affiliated to

University of Kerala and is recognized by National Council for teacher Education (NCTE). It is one of the six aided training colleges within the jurisdiction of University of Kerala.

- **Government College of Teacher Education, Thiruvananthapuram**

Government College of Teacher Education, Thiruvananthapuram has a remarkable history starting from the early years of 20th Century. This Mother Teacher Education Institution in Kerala, the second in the field of Teacher Education in Madras Province, next to Training College at Saidapet, was established in 1895 as a Normal School on the implementation of the recommendations of Hunter Commission Report of 1882 for improving the quality of education through improving Teacher Effectiveness.

11. E portfolio working diagram

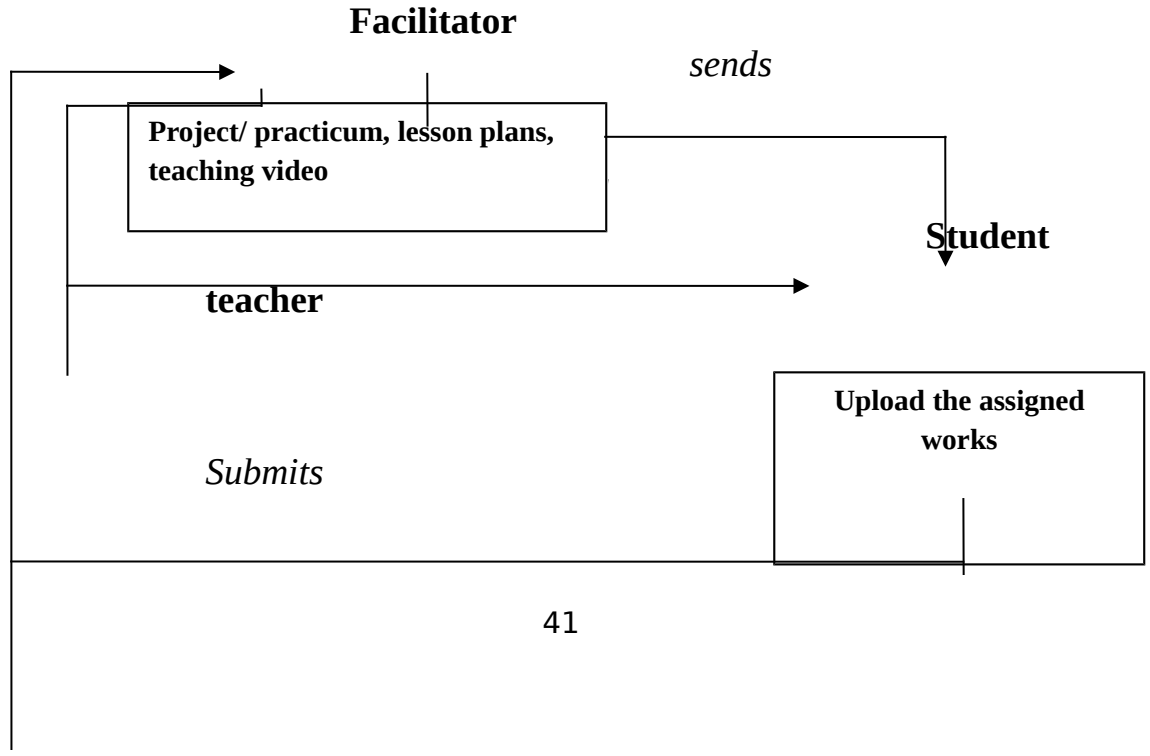

Figure 2 **E portfolio working diagram**

12. Making Users able to use the e portfolio

As this e portfolio system is introduced among teaching professionals, most of the people are not updated in using technology even after the new curriculum includes it. Implementing e learning and e portfolios into a course or curriculum is obviously dependent upon staff and students having the necessary technical skills and knowledge as well as an appreciation of what the e portfolio is for. There must be some motivation for busy students and staff to acquire additional skills. If these are recognised as transferable or generic skills, with wide applicability, participants may be more willing to learn them. If users have not engaged in using computers for learning previously they need to understand that developing ICT skills is an ongoing process.

Here are some suggested approaches to upgrading staff and student with basic technical skills:

- Computer fundamentals- A course covering an introduction to computing; instruction on the use of common applications such as word processing, spread sheets and database programs; using computers for problem solving.
- Presentation applications - instruction on using desktop publishing software, power point, graphics application etc.
- Database application development- Learning how to manage information using a database.

13. What is assessment Rubrics?

A rubric is an easily applicable form of authentic assessment. A rubric simply lists a set of criteria, which defines and describes the important components of the work being planned or evaluated. For example, students giving a research presentation might be graded in three areas, content, display, and presentation. A given criterion is then stated in several different levels of completion or competence, with a weighted score assigned to each level. Therefore, for each of the three areas, a score would be assigned, (0 being the lowest level). It sounds more complicated than it actually is, and looking at some of the examples in the list of links below should help.

A rubric should give clear guidelines to a reviewer on how to evaluate or "grade" a project presentation. Since the criteria for assessment are clearly defined in gradations from poor to excellent, different reviewers can arrive at similar conclusions when comparing a given presentation to each of the graduated criteria on a rubric.

As a guide for planning, a rubric gives students clear targets of proficiency to aim for. With a rubric in hand, they know what constitutes a "good" project presentation. As a gauge for measuring progress while the project is under way, a rubric can be a handy tool to help keep students on target: they can compare their progress with where they want to be on the rubric's proficiency scale, and refer to it in order to remind themselves of their goal. The most common assessment and evaluation tools used for collaborative learning are web-based rubrics. Most generate printable versions of the rubric. Some have a rubric calculator, allowing the teacher to select appropriate performance indicators and have a grade generated. Developing meaningful rubrics can be a challenge. Involving students in the development of rubrics helps them with their thinking, creates buy-in on their part, and clarifies expectations all around.

Finally, as an assessment tool, teachers can use it to assess projects, student groups, or individual students; students can use the same rubric for self-assessment as individuals, in groups, and for peer assessment; and parents can answer for themselves their questions about their child's performance.

13.1 Rubrics for teaching video

	Poor **2 pts**	**Fair** **4 pts**	**Good** **6 pts**	**Better** **8 pts**	**Best** **10 pts**
Content	Poor The video shows only 2 organelles on a plant cell and 2 on an animal cell, explaining the function of each.	Fair The video shows at least 4 organelles on a plant cell and 2 on an animal cell, explaining the function	Good The video shows at least 6 organelles on a plant cell and 4 on an animal cell, explaining the function	Better The video shows at least 8 organelles on a plant cell and 6 on an animal cell, explaining the function of each.	Best The video shows 10 organelles on a plant cell and 8 on an animal cell, explaining the function

		of each.	of each.		of each.
Drawings	Poor The drawings are messy, not labeled correctly, and are hard to understand.	Fair The drawings are not very clear, have some correct labeling, but are hard to understand.	Good The drawings are fairly clear, have some correct labeling, and are fairly easy to understand.	Better The drawings are mostly clear, almost labeled correctly, and are almost completely understandable.	Best The drawings are clear, labeled correctly, and are easily understood.
Audio	Poor The audio is hard to understand and has very little correct information.	Fair The audio is somewhat distinct and clear. It has some of the correct information.	Good The audio is fairly distinct, clear, and easy to understand. It has a fair amount of the correct information.	Better The audio is mostly distinct, clear, and easy to understand. It has almost all of the correct information.	Best The audio is distinct, clear, and easy to understand. It has all of the correct information.

Table 1 rubrics for teaching video

13.2 Rubrics for reflective journal

The reflective journal is designed to help you organize your thoughts on a topic or concept, to document your work and experience, to provide a place for you to write questions and comments, and to help me by providing additional insight into your experiences. Journal entries will often be prompted with specific questions, but may at times be loosely guided with topic suggestions,

or simply a general place for your reflections. Journal reflections are typically worth 20 points per week

Criteria	Outstanding A	Proficient B	Basic C	Below Expectations D
Content	Reflection conveys extensive evidence of a personal response to the issues raised in the course materials. Student demonstrates personal growth and awareness Reflects well on own work, demonstrates a range of meta-cognitive practices and provides many examples	Reflection conveys evidence of a personal response to the issues raised in the course materials. Student demonstrates that he/she is beginning to develop new ways of reflecting on their world Demonstrates an ability to reflect on own work. Provides examples consistently. Begins to demonstrate good meta-cognition.	Analysis conveys little or some evidence of a personal response to the issues/concepts raised in the course materials. Demonstrates an ability to reflect on own work but provides few examples	No personal response is made to the issues/concepts raised in the course materials. Does not reflect on own work at all and no examples are provided
Text	Is able to make inferences well and comprehends deeper meaning, consistently demonstrating insight and their relevance to the world and society	Is able to make inferences and comprehends deeper meaning on most occasions. Relates texts and issues raised to other texts consistently	Demonstrates some basic comprehension of texts but does not make connections with the bigger picture.	Is not comprehending or reflecting on what is read or viewed
Tasks	Work demonstrates that much effort was made to attempt all tasks set, with some originality and extra initiative	Work demonstrates that some effort was made to attempt all tasks set	Little effort was made to attempt all tasks set	Very little effort was made to attempt all tasks set

Table 2 Rubrics for reflective journal

13.3 **RUBRICS FOR PRACTICUM** (With presentation and writing)

CATEGORY	Exceeded the standard(s)	Met the standard(s)	Below the standard(s)	Far below the standard
Problem stated	The stated problem described the overall meaning of the problem and all details	The stated problem described the overall meaning of the problem and most of the details	The stated problem described some of the Problem, but details were missing.	The problem stated is missing or does not describe the overall meaning of the problem.
What we know	Student listed all previous knowledge about the problem.	Student listed most of the previous knowledge about the problem.	Student listed some previous knowledge about the problem.	Student listed very little, no previous knowledge about the problem, or information that do not relate to the problem.
Information and/or supplies needed	Student listed all necessary information and/or supplies needed that directly related to the problem.	Students listed most necessary information and/or supplies needed that directly related to the problem.	Students listed some necessary information and/or supplies needed that directly related to the problem, but more needs to added to fully solve the problem.	Student did not list enough necessary information and/or supplies needed to solve the problem. This needs to be completed.
What should we do to solve the problem	Student listed all steps necessary to solve the problem.	Student listed most steps necessary to solve the problem.	Student listed some steps necessary to solve the problem, but more are needed to fully solve the problem.	Student listed no or not enough necessary information and/or supplies needed that directly related to the problem.
Problem solution	The solution effectively solves the problem. It is apparent that the student understands the problem fully and knows how to solve this problem and others like it.	The solution effectively solves the problem. It is apparent that the student understands the problem and how to solve it.	An attempt was made to solve the problem, but it does not do so completely. It is unclear that the student fully understands the problem or how to solve it.	No attempt(or a very weak attempt) was made to solve the problem. It is unclear that the student understands the problem or how to solve it.
Solution presentation	Student effectively presented the solution staying on topic 100% of the time. The student could	Student presented the solution staying on topic at least 90% of the time. The student	Student presented the solution, but strayed off topic many times. The student had	The solution presented was ineffective straying off topic often. The student

Table 3 Rubrics for Practicum

14. Screen shots of the website (www.teacherseportfolio.com)

Figure 3 Home page

Figure 4 Faculties

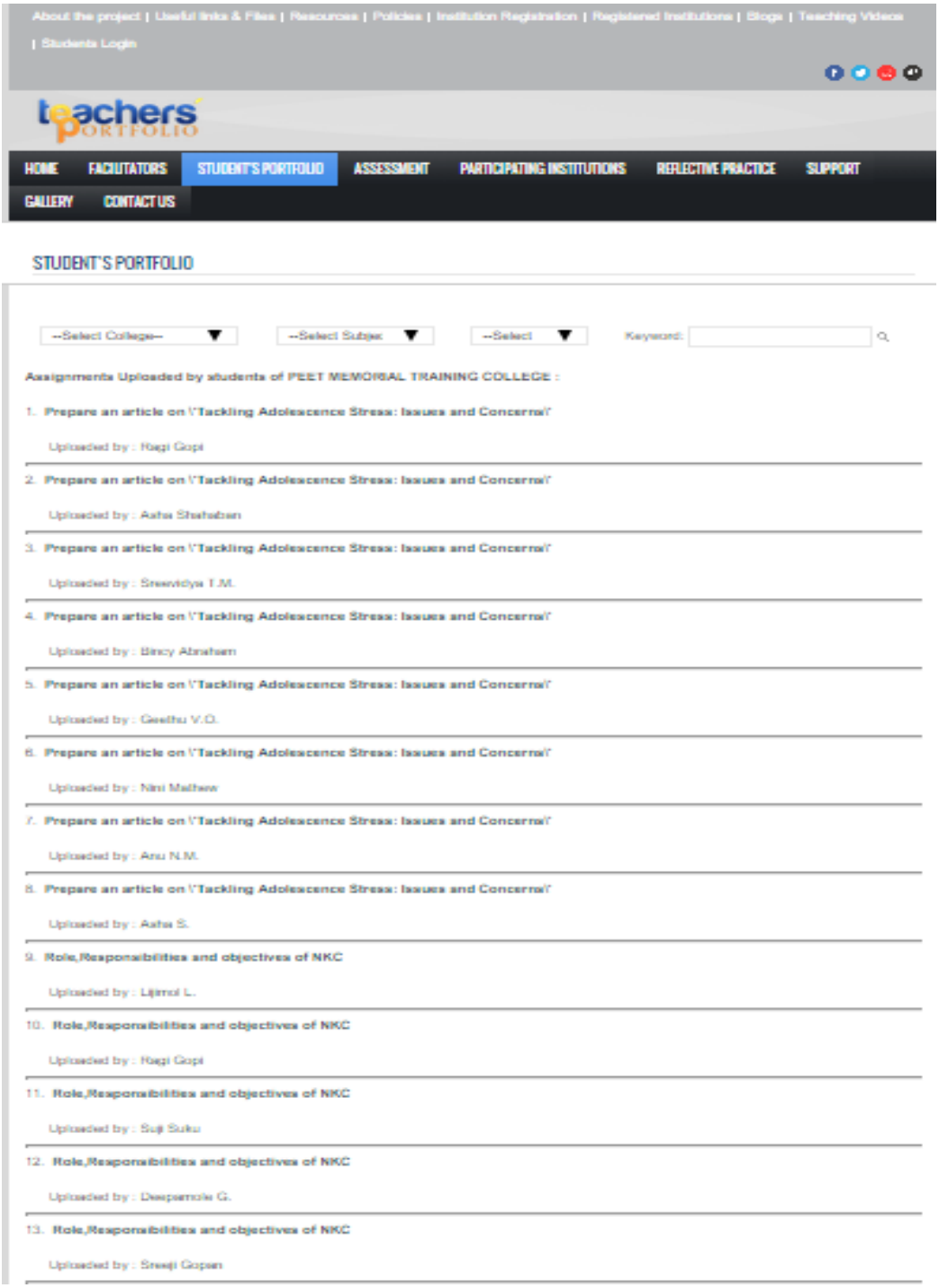

Figure 5 Students' assignments

Figure 6 Reflective practice

Figure 7 Teaching videos

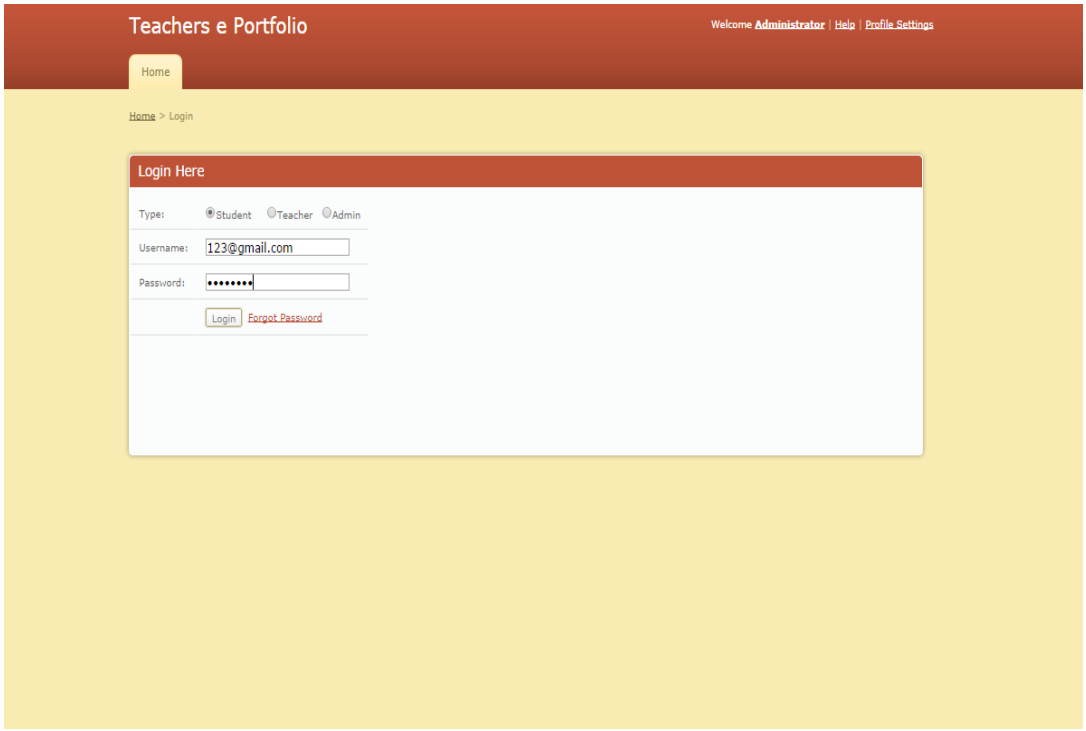

Figure 8 Login page

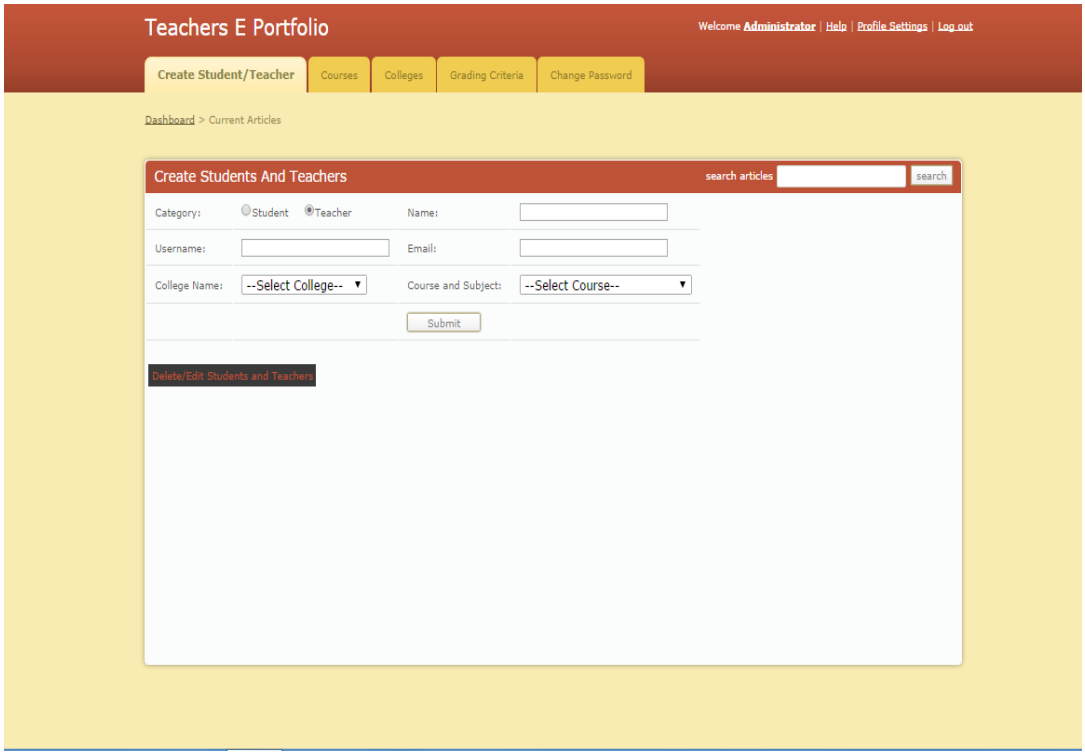

Figure 9 Registering students and teachers

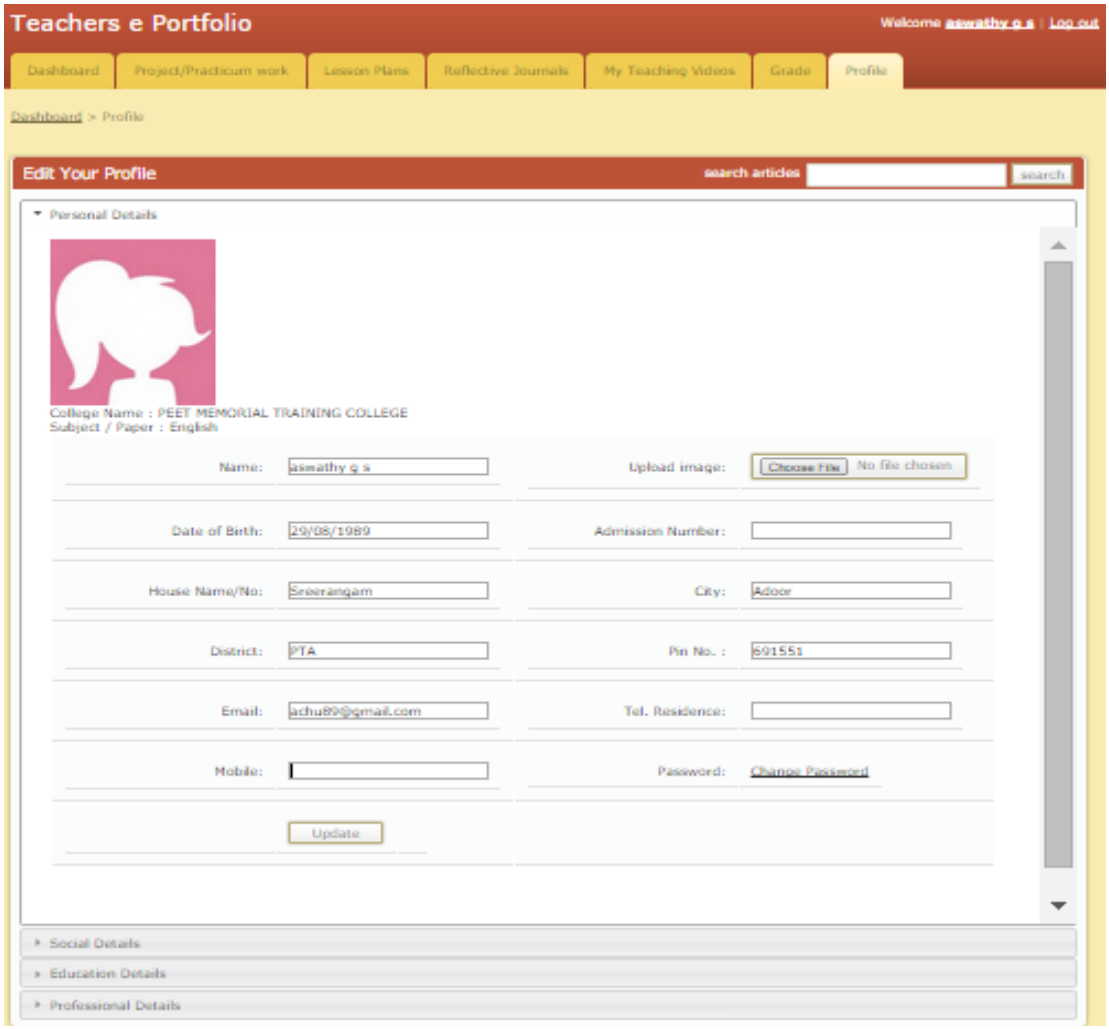

Figure 10 Student's profile

15. Conclusion

The use of portfolios in teacher preparation programs has gained in prominence within teacher education in recent years. In particular, the use of electronic portfolios is being widely promoted in many teacher education institutions in line with an increased focus on digital technology integration into the teacher preparation curriculum. When implemented effectively, electronic portfolios are being used to promote reflection, facilitate self-directed inquiry, document student learning, growth, and development, and determine initial licensure readiness among pre-service teachers. There is little to be gained, however, from implementing electronic portfolios without attending to the many challenges that face this particular format choice. Similarly, deciding to use electronic portfolios as a major assessment piece in a program will not guarantee successful implementation. Ensuring that all participants are offered ongoing support in the required technology presents quite a hurdle, although it is an essential component of working with electronic portfolios. Furthermore, it is important that systems for support, management, and assessment of electronic portfolios be developed prior to implementation on a wide scale. Ownership of the portfolio among the faculty is crucial to promoting a successful electronic portfolio initiative and it would be unwise to expect the electronic portfolio process to be embraced by all faculty, students, and departments initially. Collectively, the research to date recommends starting with a thoughtful planning process and beginning the implementation process on a small scale. This same body of research also reminds teacher educators to remain ever mindful that at the heart of the portfolio initiative is the portfolio's purpose. Everything, including the data collection and documentation process, the support and mentoring offered to the students, and the assessment of their efforts, stems from the *purpose* of the portfolio. The benefits of using electronic portfolios represented within the literature are many and the

challenges resulting from using this format are equally so. While sensitive to the process/product dichotomy that portfolios foster, future research must focus on how, in what context, and to what degree electronic portfolios facilitate student growth and learning. While theoretical support regarding the benefits of portfolios is strong, scant empirical support is available (Borko et al, 1997; Pecheone et al, 2005). It is with this future focus that teacher educators and the students with whom they work will realize the true potential of electronic teacher portfolios and how best to implement them within teacher preparation programs.

A portfolio tells a story. It is the story of knowing. Knowing about things... Knowing oneself... Knowing an audience... Portfolios are students' own stories of what they know, why they believe they know it, and why others should be of the same opinion. A portfolio is opinion backed by fact... Students prove what they know with samples of their work." (Paulson & Paulson, 1991, p.2). The purpose of development of such an e portfolio is knowledge generation and sharing, professional development and reflective learning. This project envisages that student teachers upload the best of their creative works such as lesson plans, project works, reflective diary, and a number of other artefacts. Provisions for self reflections and peer comments are provided a greater focus in this project. The works of teachers are assessed by the faculty members or experts and the student teachers can make changes in their work based on the assessment and feedback. Thus the system turns as a base for continuous professional development.

The electronic portfolios can be presented in various forms of electronic multimedia like audio, video, graphics, art clips and so on. However, the wide range of media through which electronic portfolios can be developed adds to their sophistication and consequently the effort involved in their development

and maintenance. Information security is also an area of concern since portfolios accessible through the internet are open to the general public. Some teachers look at an electronic portfolio as just another student webpage. Unless it has clearly defined aims and goals, an electronic portfolio can easily become a student webpage instead of a powerful learning and assessment tool.

The student teachers, once they get out of the institution can continue their page and can add more works to their page. Therefore this is a continuous process. Thus a digital culture can be developed among the teachers through this project which can change their attitude towards technology, professional skill and development. This is needed for future teachers, since we are going to live in a technology drawn society.

There are many purposes:& goals for the portfolio which determine the content: Learning/Process, Assessment, and Marketing/Showcase. Learning/Process Portfolios involve the focus on the Greek Philosophers' directive, “know thyself” which can lead to a lifetime of investigation. Self-knowledge becomes an outcome of learning. In a portfolio development study (Brown, 2002) conducted with adult learners developing portfolios to document prior learning, Judith Brown found the following outcomes: increased students’ understanding of what, why, and how they learned throughout their careers, enhanced their communication and organization skills, reinforced the importance of reflection in learning. The following technology can support Learning or Process Portfolios: Web Logs (‘blogs’), Reflective journals, Online discussions, and Self-report surveys.

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