

Block

5**DEVELOPING PORTFOLIOS**

UNIT 21**Portfolios: A Review**

187**UNIT 22****Design and Development of ePortfolios**

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BLOCK INTRODUCTION

We welcome you to Block-5: Developing Portfolios of this Course MDE-412: Instructional Design. This is the fifth and final Block of Course MDE-412. In the previous four Blocks of this course, you have learnt about the principles, theories, models, processes and practices for designing instructional materials for open and distance education.

You have also read the various phases of ADDIE approach, different theories and models of instructional design, the processes and practice of instructional design which have implications for designing open and distance learning study materials. As a student of this course, you are expected to be able to develop a portfolio based on the implications of instructional design in open and distance learning (ODL).

You have already studied the first four Blocks, which consist of twenty (20) units. The first Block discusses three schools of thought focusing on behaviourism, cognitivism and constructivism and their implications for designing instruction. In Block two, different theories and models of instructional design are discussed with their implications for designing instruction in the context of open and distance learning. In Block three, we have focused on the processes involved in designing instruction. The fourth Block refers to different practices for designing to be followed in different situations, for example – classroom, training programmes, open and distance learning, multimedia and e-learning.

This Block-5: Developing Portfolios will help you to practice the skill components pertaining to designing instruction in ODL. Developing portfolios is a practical task and has a pedagogic function as well as serves the purpose of formative and summative assessment. This Block introduces you to the concept of portfolios and how they are relevant for demonstrating your skills for designing instruction. You will also learn more about designing portfolios in Course MDE-518, Block-5.

Each Unit of this Block contains the following components: A structure, introduction and learning outcomes with contents presented in sections and sub-sections, check your progress questions and possible answers for check your progress questions. Suggested reading and references on instructional design related to each unit are also provided to facilitate the process of developing portfolios. Now based upon your learning in the five Blocks and 22 units, you can apply your reflective skills to develop portfolios that demonstrate your understanding for designing instruction.

We hope that this fifth Block, along with the previous four Blocks, will help you in developing your skills to prepare a Portfolio successfully. Further with the completion of the study of Course MDE-412, we hope that you have developed competencies that will help you to become a successful instructional designer.

Good luck!

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Course Coordinators



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UNIT 21 PORTFOLIOS: A REVIEW

Structure

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21.1 INTRODUCTION

In Units 11 and 15 of Block-3, you have studied about diagnostic, formative and summative assessment of student learning. Diagnostic assessment is carried out by a teacher through all stages of instruction. Diagnostic assessment helps a teacher to start his/her instruction at the level at which the students have reached. Formative assessment provides information about instructional units in progress. The information helps to develop the final unit or product and helps teachers and students to adjust or modify their learning tasks through the feedback. It is applied to course improvement and students' learning. Summative assessment is carried out at the end of an educational activity and helps the teacher to assess learning. There are a number of assessment techniques used during diagnostic, formative and summative assessment stages. One of such techniques or tool of assessment is the Portfolio. Student portfolios developed as a major tool of assessment in the mid-1990s (Marsh, 2009).

Portfolios can include a number of components. They are records, plans, models, notes, written work, audio and video programmes, photographs, and other artifacts. Students decide what to include in their portfolios and can reflect on what they have learnt. Therefore, the portfolios are not only the activity carried out by an individual student but also the strategies they have used in making their decisions. Teachers can assess not only the components of portfolios but also the processes that students have followed in carrying out these activities while preparing a portfolio for a course.

Open and distance learning (ODL) requires designing instruction and assessment strategies for diverse groups of learners. As a student, many questions that may come to your mind such as “How does a teacher in distance education system know that distance learners are acquiring knowledge and developing skills while studying the course materials?”,

“What have learners learnt in a specific course?” “How does assessment influence the design of the courses?” “How can students demonstrate what they know?” Although these questions may be answered through some forms of assessment (assignments, projects and term end examination), yet performance assessment with the help of portfolios integrated with electronic assessment may provide you more information and feedback for above questions.

In this unit, the focus is to facilitate a learning environment where you can engage with the study materials and course content of the previous twenty units in a meaningful way through the use of portfolios. Student portfolios act as tools of learning and assessment. This unit provides suggestions for formative assessments designed to help you to show what you have learnt in this course. So, developing a portfolio is closely associated with diagnostic, formative and summative assessment of student learning.

21.2 LEARNING OUTCOMES

After going through this unit, you should be able to:

- explain the concept and purpose of a portfolio;
- describe different components of a student portfolio; and
- identify the different types of portfolios.

21.3 PORTFOLIO: CONCEPT AND PURPOSE

The term ‘Portfolio’ is derived from the Latin word ‘Portare’, which means ‘to carry’ and ‘foglio’, which means a ‘sheet’. In the beginning, Portfolios were used in finance and marketing to showcase the different stocks and shares that a person may possess. Corporate sectors also use portfolios to view the entire professional profile of the candidate at a glance. Portfolios also act as an important medium for assessing a learner regarding his/her professional capabilities. These are used by individuals for exploring better professional opportunities and for performance appraisal and professional development.

Let us now try to understand the meaning and significance of portfolios for learning, instruction and assessment.

When we look at portfolio in an educational context, the portfolio developed by a student showcases his/her work done during the course for acquiring a qualification. A student portfolio is thus a collection of documents, articles, writings, models, frameworks that the student assembles in order to demonstrate that he/she has the prior and experiential learning to earn a course level credit. Such a student portfolio may be made up of articles written, books published, conferences attended, awards as well as other meritorious work done by the student. Portfolios are portable, visual archives of design products, such as multimedia graphic designs, web sites, flash animations, video clips and papers that can be presented to peers, teachers, tutors, academic counsellors, and course coordinators in a variety of formats. The idea behind creation of the portfolio is to highlight the diverse work done by the student to assess the level of his/her competency.

Portfolios serve many useful purposes for a learner. Portfolios are significant in the student's academic journey as they also provide the students an opportunity to critically reflect on their own work in relation to a set of internalized standards i.e. standards that they are shared with many others such as peers, academic counsellors, teachers, tutors and course coordinators. The student portfolio requires a demonstration of knowledge, skills and application (KSA) of the concepts or subjects that are being studied. Portfolios thus help students to focus attention on their learning efforts and accomplishments and in doing so, the portfolio helps students to improve their learning. A student portfolio is a summary of the student's major learning accomplishments and strengths. It describes a student's work and achievements.

Student portfolios are a means to link assessment directly to instruction. Within this context, teachers and student jointly develop some important criteria for assessment. Portfolios help students to understand the assessment criteria set for them. As students learn more about designing assessment procedures, their understanding of whole assessment process is enriched. Students can then use portfolios to keep their own records and reflect on how well they are doing. By viewing the evidence of their increasing proficiency, they reflect on their own progress. According to Calfee and Perfumo (1996), portfolios have been used to document teaching, students' learning and performance. This can serve both to stimulate reflection about good practice and to provide evidence for assessment of student's learning. By learning to communicate with peers, teachers, and parents about their achievement, learners can also learn to take more responsibility for their own academic success (Costantino, De Lorenzo & Kobrinski, 2006). The portfolio therefore prepares the learner to develop knowledge and competencies for making a transition from learning to a professional practice.

Let us now look at the *merits* of a portfolio. A portfolio can:

- Demonstrate knowledge, skills and attitudes of the learner while applying the principles of instructional design;
- Showcase the learners' strengths and interests and their understanding of instructional design;
- Present a record of a students' work over a period of time. The working portfolio may show how the design has been conceptualized and progressed from an abstract idea to a concrete model;
- Enable measurement of student achievement over a period of time;
- Act as an evaluation tool for performance appraisal, personal assessment and goal setting;
- Provide diverse information about the learner under one cover;
- Act as an effective tool for reflection by students as well as peer sharing;
- Help the learner in self-assessment;
- Provide opportunities to select a unit or block for preparing a portfolio according to his/her choice.

Let us also identify some *demerits* of a portfolio:

- It is time consuming to collect and select the resources for developing portfolios.
- It needs continuous updating to stay relevant and current.
- A paper portfolio may be bulky and not easily portable.
- ePortfolios require application of technology and skills by the learner.

To summarize the above discussion about portfolios, we can say that portfolios are a collection of a student's work in a course and can include excerpts from a unit or a block of a course, video or audio clips, research articles, papers, online discussion postings and reactions or suggestions of peers and teachers. So, for a learner, the portfolio is a tool of self-assessment to know your own progress while studying the course. As learners, you may think about your learning experience of a day or a week or a month during the course work and record your reactions about the course and review your previous entries in the record (Portfolio) to see how you are progressing as a distance learner.

Check Your Progress 1

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1. What is a Portfolio?

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2. Describe the different purposes of a student portfolio.

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21.4 PORTFOLIOS AND INSTRUCTIONAL DESIGN

As you have learnt in the previous section, a student portfolio provides you an opportunity to present your ability when you are involved in course work. Such portfolios serve as evidence of a learner's own learning. Before developing a portfolio, it is important to identify different components that need to be kept in mind while conceptualizing and developing a portfolio.

Let us now identify these components.

21.4.1 Components of a Portfolio

- **Vision, goals and outcomes**

The vision, goals and outcomes are the first step in the development of a portfolio. Before you start developing your portfolio, it is necessary to consider why you are involved in this activity. You must be able to develop a vision that reflects the philosophy and framework of the portfolio. The next step is to identify the goals for which the portfolio is being made as well as the outcomes which you expect to achieve once the portfolio is completed. This is a very important exercise as it will provide you the direction for building your portfolio. The clarity about goals and outcomes is necessary for both the teacher as well as the student.

If you are an instructional designer who is expecting his/her students to develop a portfolio, then the purpose for which the portfolio is going to be used by the teacher must be made clear to the students. For instance, if the student portfolio is to be used for assessment purpose by the teacher, then this needs to be explained in the Student's Course Guide. If you are a student, then you have to understand the purpose and the expected learning outcome and accordingly plan how to develop learning portfolios related to this course.

- **Intended Audience**

The next important component is that of the identifying the audience i.e. for whom is the portfolio being developed? Who is the intended audience? This issue also derives from your goals and outcomes as your goal will throw light on the nature of your audience. For instance, if you as a student are preparing the portfolio where the goal is to submit it for term-end evaluation, then your audience is the teacher/assessor or evaluator or your peer group. On the other hand, if you are seeking a job, then your portfolios' audience is the potential employer. In both cases, you will prepare your portfolio according to the audience. Your portfolio should address the needs of your audience. As a student, you also need to study the mission, work profile of your audience so that you can develop it accordingly. Understanding the audience will also help you to decide the content of your portfolio.

- **Content-Selection, Sequencing and Coverage**

The next logical step is that of the content of your portfolio. What do you want to illustrate? How will you select and then sequence your work i.e. in which order will you place your documents? What will you place within the portfolio so that your skills and competence are best displayed? This issue is again connected to your goals and audience. If you are a student whose portfolio is aimed at assessment of your learning, then the content needs to demonstrate the achievement of learning outcomes. The selection of content by the student also has to be done very carefully so that the full range of the curriculum coverage is displayed. There should be sections that demonstrate your ability to reflect, collaborate, communicate as well as show the research conducted by you. The self-identity of the learner must also be visible through the nature of content selected for the portfolio. For a learner who is displaying skills of being an instructional designer, the content should include functions and models of instructional design, so that different aspects of learning are visible in the content.

You also need to ensure that you sequence the work in the portfolio systematically with content so that it flows and shows continuity. You can develop the beginning/opening pages, followed by the body of your work and then have content that forms the closing section i.e. it summarizes your work and also implications of your work and the future direction. The teacher or evaluator who will be assessing your work should be able to gauge the depth of your knowledge, competencies as well as the diversity of your skills. The standard of your work must also be reflected in the portfolio.

- **Documentation**

The portfolio can be developed using different documents which will best showcase the knowledge and skills as well as creativity of the student. These

documents can be used depending upon the nature of the discipline. According to Marsh (2009), a student portfolio may include the following:

- Print materials/content (Course/Unit/Sections)
- Journals
- Records
- Daily logs
- Self-assessments, such as questions/checklists and rating scales
- Experiments
- Demonstration of skills
- Research notes/ Survey of learning resources
- Team or group activities
- Creative works
- Major projects or products, such as websites, oral history collections, audio and video programmes, photographs, charts, flash animations, video clips and timelines, multimedia graphic design.
- Tests/Tools/Techniques
- Peer Comments/Suggestions
- Rough drafts and finished products
- Teacher comments.

(Source: Marsh, 2009)

- **Presentation: Organization and Formatting**

The manner in which the content is displayed reflects the organizational skills of the learner/instructional designer. Depending upon whether the presentation is through a paper-based portfolio or an ePortfolio, the learner must decide the presentation design. The presentation style has to be accordance with the goals of the portfolio.

The portfolio can use graphics, video clips, links and other materials to showcase the work done. The presentation must also include a table of objectives, a statement of professional goals, designing components as well as a summary of the skills of the learner. A resume or a personal statement can also be added to the portfolio. In case the portfolio contains examples of collaborative work, then there should be ways by which the specific contribution of each learner can be recorded. The presentation of a portfolio is a means to best demonstrate the knowledge and skills of a learner in this course.

Many educational institutions indicate the formatting requirement of a portfolio such as the paper size, font type and size, alignment, cover design, number of words, number of pages. In case of eportfolios too, the digital requirements may be specified. There may also be a specification of the supporting certificates that are to be submitted. The student must keep in mind these requirements while preparing the portfolio.

- **Assessment requirements**

The learner must also be aware as to how the portfolio will be assessed. The teacher needs to identify the performance criteria and observable indications for assessment so that the learner can design and develop the portfolio presentation accordingly. The portfolio should contain evidence of work

done. These can be in the form of work samples, representative artifacts, papers, resources, models, which may have been prepared over different periods of time. Therefore, periodic updation of portfolios is also required prior to the assessment.

Activity 21.1

In the above section, you have read about the possible documents that may be included in a portfolio.

- Reflect upon the nature of your own discipline and make a list of documents that you may include in your portfolio.
- *Remember that a portfolio dealing with a topic from History subject may differ from that displaying an area of Biology subject.*

21.4.2 Designing a Portfolio

The portfolio is a useful medium for an instructional designer, as there is ample scope to highlight the theories of learning as well as application of instructional design models through the portfolio.

The learner has to apply the theories of learning, models of instructional design, instructional design process, and other related areas of instructional design so as to demonstrate his/her creativity and professional competency while preparing a portfolio for instructional design. It is suggested that the portfolio for Instructional Design and Technology (IDT) should be able to demonstrate competencies in the above areas. The features of a portfolio for instructional design include the components given at section 21.4.1.

The preparation of a portfolio for instructional design is based upon application of different learning theories and instructional models. While planning and developing a portfolio, the learner may follow the ADDIE approach (see Unit 11, Block 3).

Let us revisit ADDIE approach:

- **Analyze:** Examine the needs of the audience;
- **Design:** Create a design i.e. storyboard of the portfolio which reflects the creativity, critical thinking, problem solving, evaluation skills of the student;
- **Develop:** Collect, select and display the instructional materials based upon the audience needs and selected design;
- **Implement:** Implement the design processes to demonstrate learning;
- **Evaluate:** Ensure that all the assessment points have been for measuring learning.

Activity 21.2

In the earlier units, you have read about the ADDIE approach (Ref. Unit-11, Block 3) and about the Constructivist Learning Theory (Ref. Unit-4, Block-1).

Now develop a portfolio on the theme: Constructivist School of Thought and its implications for designing study materials in ODL.

21.4.3 Portfolio and Assessment

Portfolios are useful for carrying out self-assessment by a student at every level because they allow students to reflect on their own learning. These are record of students' ideas and thinking processes while offering opportunities for reviewing as to how students are progressing in their learning.

Portfolios serve as a *formative* performance assessment tool for students and give them an opportunity to select, reflect and communicate what they are doing. Portfolios allow students to think about the evidence they have collected and promote student involvement in their learning and formative performance assessment. Portfolios can be used by teachers to modify or adapt instruction based on students' performance. Students thus produce evidence of their progress to adjust their own learning. (Hamm & Adams, 2011)

According to Hamm & Adams (2011), students use performance or work samples to show their participation in conducting research, experiments, involvement in collaborative inquiry as well as reflective process while preparing a portfolio. Portfolios allow students to represent their progress in a more authentic and meaningful manner. Portfolios not only capture an authentic portrait of a student's thinking, but they also provide an excellent conferencing tool for meetings with students, parents, and supervisors. So, tools and techniques of assessment incorporated at this stage are checklist, attitude scales by teacher, interest inventories, rating scales by students, questionnaires, self-reports, attitude scale and aptitude scales, interview technique etc.

As a student, after developing your portfolio before you submit it for assessment, you should try to obtain reviews from peers, faculty or other professionals, and revise it accordingly. Such review would help in checking the content, language as well as format. A student may also receive feedback on presentation techniques and improve the portfolio before its final submission for assessment. Portfolios also serve as a summative performance assessment tools.

Portfolios are useful tools for teachers as they help them to pitch performance tasks in accordance with the academic level of the learners and tailor it to the maturity of their students. Thus portfolios provide a framework for teachers to have conversations about the strengths and weaknesses of their students' performance.

Check Your Progress 2

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1. Explain different components of a Portfolio.

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2. Describe how ADDIE approach may be applied for designing a Portfolio.

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21.5 TYPES OF PORTFOLIOS

Portfolios can be prepared depending upon the objective for which they have been developed. Different scholars have suggested different types of portfolios. According to Danielson and Abrutyn (1997), portfolios can be of three types: Working portfolio, Display portfolio and Assessment portfolio. According to Hartnell-Young and Morries (2007), portfolios may be described as Formative portfolio, which is prepared at the development stage. Summative portfolio is a cumulative portfolio prepared for final assessment and a Marketing portfolio which basically focuses on the career advancement of the person (for example in marketing management course). According to a study by Fersten (2009), portfolios may be those that showcase the achievement of a person or process portfolio, evaluation portfolio or an online/ePortfolio.

Let us discuss the different types of Portfolios.

21.5.1 Working Portfolios

The working portfolio can be described as a 'work in progress'. Such a portfolio demonstrates the work which is still in an unfinished form and contains samples that may be at different stages of completion. Such a folder contains all the work that is being done for the achievement of specified learning objectives. Working portfolios for students would include a collection of their work which displays how they have selected a particular topic and the work they have done on the topic. It also shows their thought process and reflection towards the task. Such a portfolio can be used by the teacher to diagnose how the student is progressing as well as identify the strengths and weaknesses in the learner's learning.

The contents of the working portfolio also depend upon the audience for whom it is being prepared. For example, while developing portfolio in the case of school education, the primary audience could be the teacher as well as the parent. The portfolio helps to give a realistic picture of the abilities of the learner and also provides evidence of the work done by the learner. For instance, in the case of a student who has read this course i.e. Instructional Design, the process for creation of a portfolio involves identification of a specific theme based upon which the portfolio has to be designed and then followed by the collection and development of materials related to the theme. The materials depend upon the objective to be achieved and diverse methods can be used to showcase the objective. (Also see Unit 22, Activity 22.1)

The working portfolio can be reviewed at different stages by the teacher, which could be helpful in assessing the progress of the student. Such a review would also help to identify those items in the portfolio which can be shifted to the assessment portfolio, which will contain the final documentation. It must be emphasized that the learners should be able to give reasons for selection of the final pieces that are being moved to the assessment portfolio.

21.5.2 Display Portfolio

The display folder is the display of the student's best work. This folder is meant to showcase the most meritorious work of the student such that it provides a complete review of the range of the work done by the learner and demonstrates the high quality of work. A display folder is also a means for showing the progress of the learner and is thus maintained on an annual basis. A student may add an improved version of a work done earlier to show his/her progress to the teacher. Similarly, a work of a higher level may also be included in the display portfolio. Display folders can be prepared by learners of all disciplines. For example, an artist can show the progress in their art work, while students from a creative writing course can showcase the development of their writing skills. The progress in developing models can also be displayed through such a portfolio. The audience for such a folder is both the learner as well as the teacher. In the case of distance learning students, such portfolios can be viewed by the distance teachers/academic counselors to review the progress and achievements of the learners. The process of preparation of such a display portfolio is similar to that of a working portfolio. The learner must be able to describe why the work has been selected for display as well as what the display portfolio is showcasing.

21.5.3 Assessment Portfolio

The assessment portfolio is developed for the purpose of assessing the learning that has taken place. Such a portfolio documents the specific achievements against the stated learning outcomes. The items displayed in the assessment folder display the knowledge and skills acquired by the learner as a part of the learning process. All the items in the assessment portfolio would serve as evidence of the learner's competence and mastery in the area. The audience of such a portfolio could be the teacher or the evaluator who would be assessing the final output of the learner. For example, while preparing an artwork, the learner may place only the finalized artwork in the assessment portfolio so that the final product is visible to the assessor. According to Danielson and Abrutyn (1997), there are some basic steps for developing an assessment portfolio. These are as follows:

- Determine the curricular objectives to be addressed through the portfolio;
- Determine the decision that will be made based on the portfolio assessments;
- Design assessment tasks for the curricular objectives;
- Define the criteria for each assessment task and establish performance standards for each criterion;
- Determine who will evaluate the portfolio entries; and
- Train assessors/teachers or other evaluators to score the assessment of a portfolio. This will ensure the reliability of the assessments

21.5.4 Skill Area Portfolios

The skill area portfolio is aimed at demonstrating the skills acquired by the learner in a particular area. Such a portfolio contains the level of proficiency that the learner has acquired in that area and the items in the portfolio are evidence of this competency. This may include skills such as problem solving mastery in the use of technology, ability to make a model to display scientific knowledge, projects on various social issues and others skills.

21.5.5 Paper and ePortfolio

The portfolios can be developed using different mediums. You may prepare (i) a paper based (hardcopy) portfolio or (ii) an ePortfolio. A paper based portfolio is made using paper that may be of a prescribed type and size. It is a physical entity and contains documents prepared on paper by students and placed in folders, notebooks, binders. These could also be spiral bound. Paper based portfolios can be bulky and difficult to carry and transport. Also such portfolios require meticulous work as a small mistake may need the entire paper to be replaced. Earlier paper based portfolios were more commonly used by students of art, photography, and other disciplines. However, now with the growth of digital tools, it has become more convenient to replace paper based portfolios with ePortfolios.

ePortfolio is an on-line collection of work consisting of digital content (files, photos, graphics, multimedia). It allows the students to demonstrate their learning experiences. ePortfolios allow a student to collect evidence of his/her skills and achievements in their own dedicated online space. ePortfolios are useful as a means to overcome challenges of portability and ownership. There is a range of ways in which technology can be used by students in the preparation and presentation of their work. The use of PowerPoint or other graphics packages to produce visual aids for presentations or posters is popular in many universities. Further as students' web skills develop, many teachers are experimenting with allowing students to create online portfolios of work or websites for assessment. You will learn more about ePortfolios in the next unit (Ref. Unit 22, Block-5).

Check Your Progress 3

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

1. List the different types of Portfolios.

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2. Differentiate between paper and eportfolio.

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21.6 LET US SUM UP

In this unit, you have studied the concept and purpose of portfolio. Portfolios are used in the educational context to demonstrate the knowledge, skills, competencies of a learner. A portfolio comprises a collection of documents, writings, models that a learner may assemble to demonstrate his/her level of proficiency. A portfolio is a summary of the learner's performance and achievements. A portfolio has different components, which include the goals and outcomes, which form the basis for designing the portfolio. A portfolio can be prepared keeping in mind the intended audience, so that it is able to address the needs accordingly. The content of the portfolio is selected according to the goals and audience. The presentation of the portfolio helps to showcase the work of the learner and can be prepared using various graphics and digital tools. The components of an instructional design involved in a portfolio are analyze, design, develop, implement and evaluate. The portfolio has many advantages in instructional design such as demonstrating the skills of the learner in applying the principles of instructional design. It also acts as an evaluation tool and helps to measure the learning acquired by the student.

There are different types of portfolios. These include working portfolio, which serves as a 'work in progress', display portfolio which displays the students most meritorious work, assessment portfolio which is used for assessing the learning that has taken place, and skill area portfolio which is prepared for demonstrating the level of skills in a particular area. Portfolio can be paper based or an ePortfolio but the aim remains the same i.e., to showcase the best work of the learner.

21.7 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1. Portfolio is a summary of the student's major learning accomplishments and strengths. It describes a student's work and achievements. A student portfolio is thus a collection of documents, writings video or audio clips, research articles, online discussion postings and reactions on suggestions of peers that the student assembles in order to demonstrate that he/she has the prior and experiential learning to earn a course level credit. (Please see section 21.3)
2. The purpose is to highlight the diverse work done by the student to assess the level of his/her competency. Portfolios are significant in the student's academic journey as they also provide the students an opportunity to critically reflect on their own work in relation to a set of internalized standards. (Please see section 21.3)

Check Your Progress 2

1. The different components of a portfolio include the concept, vision and goals of the portfolio. The portfolio has to be developed depending upon the nature of the audience, the content and its sequencing are also important. The portfolio must be based on appropriate documentation and should use an effective presentation method. The assessment requirement should be known to the learner and teacher. (Please see section 21.4.1)

2. ADDIE approach may be applied for designing a portfolio by following the principles of analyse, design, development, implementation and evaluation. (Please see sub-section 21.4.2)

Check Your Progress 3

1. The different types of portfolios include working, display, assessment, skill area portfolios and paper and eportfolio. (Please see sub-section 21.5.1)
2. A paper portfolio prepared using paper that may be of a prescribed type and size. It may be carried in a folder, notebook, binder or briefcase. A ePortfolio is an online collection of work based on digital content. (Please see section 21.5)



UNIT 22 DESIGN AND DEVELOPMENT OF ePORTFOLIOS

Structure

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- 22.3 Designing ePortfolios
 - 22.3.1 What is an ePortfolio?
 - 22.3.2 Components of an ePortfolio
 - 22.3.3 Steps in creating an ePortfolio
- 22.4 Developing ePortfolios
 - 22.4.1 Development of an ePortfolio (Using Mahara)
- 22.5 Let Us Sum Up
- 22.6 Check Your Progress: Possible Answers

22.1 INTRODUCTION

In the previous unit, you have learnt about portfolios. You will recall that portfolio is an important part of the learning process and the design and development of portfolio gives students an opportunity to demonstrate their knowledge, skills and competency.

In this unit, let us attempt to understand the development of an ePortfolio so as to facilitate a better learning environment for your engagement with materials and contents. You will recall that assessment is an important part of a course design and various strategies are used to promote this type of engagement. One such strategy is ePortfolio, which is a collection of a students' work and includes experiences and reflection during the learning process. (Ref. Course MDE-518, Block 5)

22.2 LEARNING OUTCOMES

After going through this unit, you should be able to:

- explain the concept, components and steps for developing an ePortfolio; and
- prepare an ePortfolio using Mahara.

22.3 DESIGNING ePORTFOLIOS

In the previous unit, you have learnt that portfolios contain information that is collected, organized and presented as evidences of students' work. ePortfolios offer a way for students to show an evidence of their skills in an electronic format that is easy to share, update and store (Bartlett, 2002). ePortfolios are designed as tools for teaching and learning and are a way of assessing students using technology.

22.3.1 What is an ePortfolio?

The term ‘ePortfolio’, also known as electronic portfolio or digital portfolio, has been used since the mid-1990s following the advancement in technology. An ePortfolio contains information that is collected, organized, saved, and stored in an electronic format (Heath, 2002; Wright, Stallworth, and Ray, 2002). ePortfolios make content easier to organize, accessible to a wider audience (Albright, 2003), transportable, flexible, and can be updated and edited (Heath, 2002).

There are numerous terms being used for ePortfolios. Other terms used are web-based portfolio and webfolio. Goldsby and Fazal (2001) noted a web-based portfolio as a digital portfolio incorporating web-based materials. Webfolios have also been known as static web sites using Hypertext Markup Language (HTML) links where the ePortfolio uses a database-driven, dynamic web site.

(Source: <https://www.usdla.org/wp-content/uploads/2015/09/Vol.-1-No.-6.pdf>)

22.3.2 Component of an ePortfolio

ePortfolios are also guided by standards and performance outcomes (Bauer and Dunn, 2003; Galtin and Jacob, 2002). ePortfolios need to be well organized and structured around a set of goals. An ePortfolio contains a collection of works such as papers, problem sets, reports, simulations, experiments, and drawings. The works can be in the form of graphics, sound, digital video, text, and other media and should demonstrate achievement and competence in relation to the ePortfolio goals (Bauer and Dunn, 2003).

ePortfolios promote student self-evaluation along with demonstrating problem-solving skills. In developing the ePortfolio, students make decisions and analyze information, ongoing evaluation also takes place and an ePortfolio can be prepared to explain Howard Gardner’s eight types of multiple intelligences which are kinesthetic, interpersonal, intrapersonal, linguistic, mathematical, musical, naturalist, and spatial. (Ref. MDE-412, Block-2, Unit 9)

22.3.3 Steps in Creating an ePortfolio

According to Heath, (2002), the creation of content for an ePortfolio involves four steps. These are collection, selection, reflection, and projection (see Table 22.1). In the first step, it is necessary to collect all the materials that are pertinent to the goal of the ePortfolio. In the second steps, the collected materials are to be sifted through so that a proper selection can be made according to the goal. Through the third step of reflection, the learner aims at selecting only those materials that are relevant to the purpose of the ePortfolio. In the fourth step, an attempt is made to carefully project such that the contents of the ePortfolio are able to showcase the best material and provide a path for the future growth.

Table 22.1. Four Steps for creating content in an ePortfolio

	Barrett’s Four Steps
Content	Collection
	Selection
	Reflection
	Projection
Technology	Presentation and Production

(Source: Heath, 2002, p.23)

In the next stage the attempt is to present and produce the ePortfolio. As you have read in the unit 21, one of the important components of portfolio is the audience. Therefore, the analysis of the audiences' characteristics and needs have to be taken into account. In addition to this, the latest digital tools have to be utilized so that presentation and production of the portfolio is of a high quality. It is advisable for students to prepare two portfolios, namely the working portfolio and the presentation portfolio.

Martin (2000) has emphasized that planning is an essential step in creating an ePortfolio. Planning should include the types of activities and media being incorporated depending upon the need, goal, and e-tools. One area that often gets left out of a plan is the time necessary to complete the project. Time needs to be considered from the collection step to the actual presentation. Additional time must be taken into consideration if a new software package is used for production. There are many customized system and packages for development of ePortfolios.

Check Your Progress 1

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

Describe Barrett's four steps for creating content in an ePortfolio.

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22.4 DEVELOPMENT OF AN ePORTFOLIO (USING MAHARA)

In this section, we have attempted to introduce you to the development of an ePortfolio through an open source ePortfolio. As you will recall, ePortfolio is a type of web application that allows users to record and share evidence of lifelong learning. The open source software that is being used is Mahara.

Developing an ePortfolio will help you to showcase knowledge and skill. In Unit 21, we have provided the purpose and advantages of designing portfolios. You will recall that in order to design your portfolio there are some basic steps that you have to undertake. Let us re-visit the development of a portfolio as discussed in Unit 21.

According to Hamm and Adam (2009), there are some guidelines to be followed when planning for portfolio assessment. The teachers and students need to think and reflect about these questions as below:

- What is the purpose of your ePortfolio?
- What types of skills will be assessed?
- Which content will be included in the ePortfolio?
- What will be involved in the planning and reflecting processes?
- How many work samples will be included?
- Where will be ePortfolio be kept, and who can observe it?

Once you are clear about the why and what of your ePortfolio, then you can begin working with digital tools to prepare your ePortfolio. There are many software options that are available and these options will continue to be updated and revised. Due to the fast paced changes in technologies, there are changes in the software. Let us now learn about one such software through which ePortfolio can be designed.

In this section, you will learn how to develop your ePortfolio using Mahara. Mahara is an open-source software for ePortfolio used for education. (In technical terms, it's like a content management system crossed with a social network.) For more information about what Mahara is and does, try the Mahara user manual's introduction chapter: <http://manual.mahara.org/en/1.8/intro/introduction.Html#what-is-mahara>

- **Mahara – Open Source software for ePortfolio**

The Mahara project selected "Mahara" as name for its web application. In Te Reo Māori, "mahara" means "to think, thinking, thought" and that fits the purpose of Mahara very well. Having been started in New Zealand, it was fitting to choose a Māori word to signify the concept of the ePortfolio system.

Catalyst's open source specialists are the lead developers and maintainers of the Mahara project. Since the project's launch in 2006, Catalyst has led development around the world, implementing new features and bug fixes, defining the direction of the project and supporting community members in succeeding with their ePortfolio implementation.

A first guiding principle with the development of the Mahara ePortfolio system is that it is learner-centred – a form of Personal Learning Environment. This is in contrast to the more institution-centric Learning Management System (LMS). Mahara is a stand-alone system that can be integrated into a wider virtual learning framework. We believe the Learning Management System remains a highly useful application for delivering learning. We also believe the overall environment can be enhanced and complemented by a learner-centred personal learning environment such as Mahara. Pan-institutional learner communities can also be encouraged using Mahara.

Mahara's architecture is inspired by the modular, extensible architecture of Moodle. The Mahara team has also been heavily involved in the Moodle community, with recent work mostly focused on Moodle Networks. Similarly, Mahara systems can be networked together as well having single sign-on from Moodle 1.9 upwards. In a sense, we see Mahara as a 'sister' application although the two systems are not required to go together.

Mahara will continue to evolve as a 'pluggable', modular ePortfolio system designed to leverage Web 2.0 web services and built with interoperability in mind.

i) **Background to Mahara**

First established in mid-2006, the Mahara project started as collaborative venture funded by New Zealand's Tertiary Education Commission's e-learning Collaborative Development Fund (eCDF), involving Massey University, Auckland University of Technology, The Open Polytechnic of New Zealand, and Victoria University of Wellington.

Continued development has been made possible by further support from New Zealand's Ministry of Education and the application of Mellon Foundation funds from the Open Polytechnic's winning a 2007 Mellon Award for Technology Collaboration.

ii) **About Open Source**

Mahara is provided freely as open source software (under the GNU General Public License version 3 or later). Since it is open source software, other organisations are welcome to contribute to the software's evolution. The system is modular in design to maximise flexibility and extensibility.

You are allowed to copy, use and modify Mahara provided you agree to:

- include the source code when distributing Mahara to others;
- not modify or remove the original license and copyrights, and
- apply this same license to any derivative work.

iii) **Why is Mahara an Open Source?**

- Mahara was started with the assistance of the Tertiary Education Commission of New Zealand, and has since been supported by a broad base of organisations throughout the world. The funding was intended for wide utilisation and to encourage innovation and collaboration in our education systems. With this remit, open source makes the best sense.
- The Mahara team strongly believes in open source not only for philosophical reasons but as the best development methodology for us to harness different ideas, approaches and resource efforts. While Mahara started in New Zealand, it contains the wide range of contexts and innovations in the ePortfolio and personal learning environment space. It welcomes development input and collaborations from throughout the world with Mahara Partners and the broader community of users. You can get involved in Mahara in many ways and can ask and answer questions in the forums.
- Mahara's mission is to provide the best ePortfolio system available, open source or otherwise. Proprietary software vendors can spend in excess of 50% of revenues convincing customers to buy their product (sales and marketing) and less than 10% of revenues actually making better software. Mahara would want to devote all of the available resources towards great software and value-added services like training.
- Mahara believes open source is a key driver of open standards and open standards underpins flexible systems on the internet.

iv) **Features of Mahara**

Let us discuss different features of Mahara. These are:

- ***Working with pages and artefacts***

In this software, you can control which items and what information, i.e. artefacts or learning evidence, within your portfolio that other users should be able to see. In order to facilitate this access control, all artefacts you wish to show to other users are bundled up and placed onto a page. You can have as

many pages as you like, each with a different collection of artefacts, and intended purpose and audience. Your audience, or the people you wish to give access to your page, can be added as individuals or as a member of a group or community.

ePortfolio owners create pages using a four-step process, and these pages have the following features:

- ePortfolio owners can receive public or private feedback on their pages and artefacts within that page.
- Users accessing a page can report any objectionable material directly to the site administrator.
- Users can add pages and artefacts within a page to their watch list and receive automated notifications of any changes or updates.
- ePortfolio owners can submit a page for assessment by a tutor or teacher allowing for a snapshot of the page and associated artefacts on a certain date.

- ***Competency frameworks***

Using Smart Evidence, you can create portfolios that automatically have a competency framework attached. You can then align pages within your portfolio with individual competency standards and allow assessors to provide feedback. The built-in evidence map visualizes your progress across the framework and helps you keep track of your achievements

- ***File repository***

Mahara includes a file repository which allows you to:

- Create folder and sub folder structures
- Upload multiple files quickly and efficiently
- Give each file a name and description
- Manage your file allocation quota
- When uploading a file, you may have to agree to a configurable copyright disclaimer or add specific licensing information
- Extract .zip, .tar.gz and .tar.bz2 from within the files area

- ***Journals/blogs***

A comprehensive blogging tool is provided in Mahara, where blogs and blog postings are considered artefacts and may be added to a page.

The blogging tool allows you to:

- Create journal entries using a WYSIWYG editor
- Attach files to journal entries
- Embed images into entries
- Configure whether or not you want comments on your journal entries
- Create draft entries for later publishing

- ***Résumé builder***

Mahara includes a résumé builder which allows you to create digital CVs by entering information into a variety of optional fields including:

- Contact and personal information
- Employment and education history
- Certifications, accreditations and awards
- Books and publications, professional memberships
- Personal, academic and work skills and
- Personal, academic and career goals

- ***Reporting***

Mahara comes with a built-in reporting engine that collects data when the site is used and makes it available directly in the administration area, but also via download. Reports are available anonymously but also for individuals for learning analytics opportunities.

- ***Administration***

Administrators are able to customise Mahara via a number of configuration settings which include:

- Language packages and themes
- Virus protocol
- Session and account lifetimes
- Authentication methods
- Institution setup to allow for multiple organisations to use one Mahara instance
- Page editor
- Configurable static links to main pages

In addition, with the Modular plug-in structure of Mahara, artefact and block types may be configured, disabled or enabled, according to the organisation's requirements.

- ***Support for LTI***

Mahara supports LTI (Learning Tools Interoperability) to connect to learning management systems (LMS). It allows learners who already have an account in an LMS to have an account in Mahara as well, when it is connected to the LMS via LTI.

Mahara has special connectors for Moodle that do not only allow for single sign-on from the LMS to Mahara but also for the export of content from Moodle to Mahara and for the submission of Mahara portfolios to Moodle.

- ***Privacy and security***

- Institutions are required to comply with the GDPR features available to help with that Mahara 18.04 onwards.
- Session key handling code has been tightly integrated with the core form/request APIs.

- Database abstraction prevents database injection attacks and input validation prevents script injection attacks.
- User authentication can be tied to external systems such as SAML/Shibboleth/CAS IdPs, LDAP/Active Directory, Azure AD, student management systems or other databases.

- **Interoperability**

- Connect your LMS via LTI to jump directly to your portfolio account.
- Mahara includes an import/export system with Leap2A support, and static HTML export.
- Users can place their views under any of the Creative Commons licenses.
- Mahara is built using PHP web scripting language and leverages PHP5's OO features.
- All plug-ins follow a consistent structure and inherit from a common base class (core functions of plug-ins are implemented once)
- Mahara currently supports plug-ins for Artefacts, Authentication and Search. Therefore, interoperating with an existing product simply requires the development of a plug-in.

Scalability

Mahara has been designed as a web application with a plug-in architecture. This means it is possible to scale the application up by separating hardware for search, database, file storage and web servers.

It is also possible to replicate each of these operational components to further scale the system upwards. In addition, Mahara is designed to:

- Have load balanced across several web servers;
- Have a share file data from a centralised file server;
- Have a separate database server; and
- This hosting setup has proven scalability for similar systems like Moodle.

(Source: Sub-section 22.4.1 Catalyst IT and others (2019).

The Mahara manual is licensed under your choice of Creative Commons Attribution-ShareAlike 3.0 unported or GNU General Public License version 3 or later 2011-2019.

Check Your Progress 3

- Note:** i) Write your answer in the space given below.
ii) Check your answer with the answers given at the end of this Unit.

1. Why is Mahara an Open Source? Explain.

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2. List the features of Mahara for designing eportfolios.

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Activity 22.1

By now you have completed reading all the four Blocks of course MDE-412 consisting of 20 Units. After going through units 21 and 22, please complete this activity selecting anyone from the below.

Given below are a set of activities related to Course MDE-412: Instructional Design. You are expected to develop an ePortfolio selecting an activity as per your choice.

1. Develop an ePortfolio on the theme: Cognitivist Schools of Thought and its implications for designing study materials in ODL (Ref. Course MDE-412, Block 1, Unit-3)
2. Develop an ePortfolio on the theme Theories of Multiple Intelligences. (Ref. Course MDE-412, Block 2, Unit-9)
3. Develop an ePortfolio on the theme: Learning Styles and Learning Preferences of Distance Learners. (Ref. Course MDE-412, Block 3, Unit-12)
4. Develop an ePortfolio on the theme: Instructional Design in eLearning. (Ref. Course MDE- 412 Block 4, Unit 20)

22.5 LET US SUM UP

An ePortfolio offers a way for students to show clear evidence of their skills in a form that is easy to share, update and store (Bartlett, 2002). An ePortfolio also increases the individual's comfort with technology. Research has shown that ePortfolios are positive, useful, constructivist, demanding, and multifaceted (Bartlett, 2002). Technology is ever changing, and efforts must be made to effectively use the tools for teaching and learning.

22.6 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1. An ePortfolio contains information that is collected, organized, saved, and stored in an electronic format.
2. The criteria for development are: planning and goal setting, framework for creating, communications, collaboration tools, refractive processes, and organizational flexibility.

Check Your Progress 2

1. Barrett's four steps 1) collection, 2) selection, 3) reflection, and 4) presentation and production.

Check Your Progress 3

1. Mahara team believes it is as an open source due to its best development methodology to harness different ideas, approaches and resource efforts.
2. The features of Mahara are working with pages and artifacts, competency frameworks, File repository, Journals/blogs, Resume builder, Reporting, Administration, support for LTI, privacy and security and scalability.



REFERENCES

Unit 16

- Biggs, L.J. (1977). *Instructional Design: Principles and Applications*. Englewood Cliffs, N.J.: Educational Technology Publications.
- Chellman-Carr, A., (2015). *Instructional design for teachers, improving classroom practice*, Taylor and Francis Ltd. Routledge (2nded.) London.
- Gronlund, Norman, E. (1981). *Measurement and Evaluation in Teaching*, 4thed. New York: Macmillan, pg.568.
- IGNOU (2000). Unit-3: Instructional Process in Social Studies, in ES-343: Teaching of Social Studies. New Delhi: School of Education, IGNOU.
- IGNOU (2000). Unit-12: Media Selection and Integration, in ES-361: Educational Technology. New Delhi: School of Education. IGNOU.
- IGNOU (2003). Unit-5: Unit and Topic Planning, in MES-102: Instruction in Higher Education. New Delhi: School of Education: IGNOU.
- Kulkarni, S.S. (1986). *Introduction to Educational Technology*, Bombay: Oxford & IBH Publishing Co.pp.143-144.
- Richey, Rita (1986). *The Theoretical and Conceptual bases of Instructional Design*. London: Kogan page.
- Smith, P.L., & Ragan, T.J. (2005). *Instructional design (3rded.)*. New York: John Wiley & Sons.

Unit 17

- Cisco Systems (2003). *Reusable Learning Object Authoring Guidelines: How to build modules, lesson and topics*, available: www.cisco.com.
- Gardner, H. (1993). *Multiple intelligences: The theory in practice*, New York: Basic Books.
- Heinich, R. Molenda, M. Russel, J.D., & Smaldino, S.E. (1999). *Instructional media and technologies for learning*, (6thed), Merrill/Prentice Hall: Upper Saddle River, NJ.
- Jones, T.S., & Richey, R.C. (2000). Rapid prototyping methodology in action: A Developmental study. *Educational Technology Research and Development*, 48(2), pp. 63-80.
- Kirkpatrick, D. (1994). *Evaluating Training Programmes*, San Francisco, CA: Berrett-koebler.
- Knowles, M.S. (1977). *The modern practice of adult education: Andragogy versus Pedagogy*, Chicago: Follett Publishing Company
- Loosmore, J. (1994). Color in instructional communication. *Performance and Instruction*, 33; pp.36-38
- Mager, R.F. (1990). *Preparing Instructional Objectives*, (2nd Ed.), London: Kogan Page.

- Newby, T.J., Stepich, D.A., Luchman, J.D., & Russell, J.D. (2000). *Instructional technology for teaching and learning*, Upper Saddle River, NJ: Merrill, Prentice Hall
- Peterson, Robyn (1992). *Training needs analysis in the work place*, Kogan Page: London.
- Mishra S. (2007). STRIDE Handbook-15, *Staff Training and Development in Open and Distance Education*, pp. 90.
- Wentling, T. (1993). *Planning for Effective Training: A Guide to Curriculum Development*, Rome: FAO.

Unit 18

- Bates, A. (1995). Technology, Open learning and distance education. London: Routledge. (ERIC Document Reproduction Service No. ED 407597).
- Biswas, G., & Priyadarshini, A. (1999). Distance Education at School Level. In Santosh Panda (Eds) *Policies, Practices & Quality Concerns*, New Delhi: Aravali Books International (P) Ltd, pp197.
- Freeman, Richard (2005). Creating learning materials for open and distance learning: a handbook for authors & instructional designers <http://hdl.handle.net/11599/43>
- Hartley, J. (1995). The Layout and Design of Textual Materials for Distance Learning. In Fred Lockwood (Eds) *Open and Distance Learning Today*, Routledge Studies in Distance Education, Routledge, London and New York.
- Holmberg, B. (1983). Guided didactic conversation in distance education. In D. Sewart et al (ed) *Distance education: International perspectives*. Australia: Croom Helm Ltd.
- Gustafson, Kent. L., & Branch Robert M. (2002). *Survey of Instructional Development Models (4th Edition)* ERIC Clearing House of Information & Technology, Syracuse, New York.
- Moore, M. (2003). (Eds) *Handbook of Distance Education*, Routledge, New York & London: Taylor & Francis.
- Murthy, C.R.K. (2005). STRIDE Handbook-5 Development and Revision of Self-learning materials, STRIDE, IGNOU, New Delhi
- Romisowksi, A.J. (1981). *Designing instructional systems*, London: Kogan Page.
- Rountree, D. (1992). *Teaching through self instruction*, Kogan Page, New York: London Nichols Publishing.
- Shannon, C., & Weaver, W. (1949), *The mathematical theory of communication*, Urbana: University of Illinois Press..
- Scramm, W. (1954). Procedures and effects of mass communication. In Henry, N.B. *Mass, Media and Education*: Chicago: University of Chicago Press.
- Walklin, A. (1993). *Teaching and Learning in Further and Adult Education*. Cheltenham: Stanley Thornes Ltd.

Jenkins, J. (2000). Course design (Unit-1). In Principles of Text Design (Block 2) Revised edition, Course ES-312 Design and Development of Self-learning print materials. IGNOU, New Delhi.

UK Essays. (November 2018). Theories of Communication in Education. Retrieved from <https://www.ukessays.com/essays/education/theories-communication-education-3147.php?vref=1>

Unit 19

Allessi, S., & Trollip, S. (2001). *Multimedia for learning: methods and development*. Needham Heights, MA: Allyn and Bacon.

Gagne, Robert, M. (1972). Domains of learning. *Interchange*, 3, 1-8.

Gagne, Robert, M. (1995/96). Learning processes and instruction. *Training Research Journal*, 1(1), 17-28.

Kilpatrick, D.C. (1996). Great ideas revisited. *Training and Development*, 50 (1), 54-59.

Kjelladahl, Lars (1992). Collected conclusions. In Kjelladahl, Lars (ed.) *Multimedia systems, interaction, and application*. 1st Eurographics Seminars. Germany: The European Association for Computer Graphics.

Kulkarni, S.S. (1986). *Introduction to educational technology: a systems approach to micro level education*. New Delhi: Oxford and IBH Publication Co.

Merrill, M.D. (1983). Component display theory. In Reigluth, Carles (ed.). *Instructional design theories and models: an overview of their current status*. Mahwah: Lawrence Erlbaum Associates.

Merrill, Paul; Hammons, Kathy; Vincent, Bret; Reynolds, Peter; Christensen, Larry & Tolman, Marvin (1996). *Computers in education*. (3rd edn.) USA: Allyn and Bacon.

Ravet, S. & Layte, (1997). *Technology based training*. London: Kogan Page.

Roblyer, M.D. (2003). *Integrating educational technology into teaching*. USA: Prentice Hall.

Sims, R. (1997). *Interactivity: a forgotten art?* <http://intro.base.org/docs/interact/> (Last accessed on February. 2006)

Rowntree, Derek (1994). *Preparing materials for open, distance and flexible learning*. London: Kogan Page.

Vaughan, Tay (1996). *Multimedia: Making it work* (3rd Ed.). New Delhi Tata McGraw-Hill Publishing Co. Ltd.

Woodhouse, Derek & McDougall, A. (1986). *Computers: promise and challenge*. U. K. Blackwell Scientific Publications.

- Alex, K., & Keith, (2006). *Learning objects and instructional design*. California: Informing Science Press.
- Byun, Hoseung, Paul; Hallett, Karen and Essex, Christopher (2000). Supporting Instructors in the creation of online distance education courses: Lessons Learned, *Education Technology*, 40(s) 57-60
- Cisco Systems Reusable Information Object Strategy: Definition, Creation Overview, and Guidelines Version 3, 1999 .http://www.cisco.com/warp/public/779/ibs/solutions/learning/whitepapers/el_cisco_rio.pdf
- De Vries, J., Bersin, J. (2204). Rapid e-Learning: What Works: Bersin & Associates Angeliki1, P., Asimina, M., Eleni, B. (2005). *When Instruction Meets Design: Embedding Instructional Theory Elements into eLearning*. Retrieved from <http://www.dis.uniroma1.it/~lhci/018.pdf>
- French, Deanie, Hale, Charles; Johnson, Charles and Farr, Gerald (Eds.) (1999). *Internet-based Learning: An introduction and framework for higher education and business*, London: Kogan page.
- Mishra S, (2002). A design framework for online learning environments, *British Journal of Educational Technology*, 33(4), 493-496.
- Naidus, S. (2006). *E-learning: A Guidebook of Principles, Practices and Procedures*. CEMCA: New Delhi.
- Rogers, P., Howard, C.(Ed.) (2007). *Encyclopedia of Distance Learning* (2nd Ed.). Google Books. Available online at http://books.google.com/books?id=sC9Le3jIwzIC&printsec=frontcover&source=gbs_navlinks_s

Unit 21 and 22

- Albright, M.J. (2003). ITDE 8012: *Management and evaluation of instructional technology and distance education* (2nded). North Miami Beach, FL: Nova Southeastern University
- Airasian, P.W. (2000). *Classroom assessment: Concepts and applications*. New York: McGraw-Hill.
- Bartlett, A (2002). Preparing pre-service teachers to implement performance assessment and technology through electronic portfolios. *Action in Teacher Education*, 24(I), 90-97
- Bauer, W.I., & Dunn, R.E. (2003). Digital reflection: The ePortfolio in music teacher education. *Journal of Music Teacher Education*, 13(I), 7-20.
- Borich, G., & Tombart, M. (2004). *Educational assessment for elementary and middle school education*. Upper Saddle River, NJ: Pearson Education.
- Costantino, P., De Lorenzo, M., & Kobrinski, E. (2006). *Developing a professional teaching portfolio; A guide for success* (2nd ed.) Boston: Allyn & Bacon.

- Calfee, R.C., & Freedman, S.W. (1996). Classroom writing portfolios: old, new, borrowed, blue. In R. Calfee and P. Perfumo (Eds) *Writing Portfolios in the Classroom*, pp. 3-26, Mahwah, NJ: Lawrence Erlbaum.
- Calfee, R.C., & Perfumo, P. (1996 b). A national survey of writing portfolio practice: what we learned and what it means. In R. Calfee and P. Perfumo (Eds) *Writing Portfolios in the classroom*, PP. 63-81, Mahwah, NJ: Lawrence Erlbaum.
- Danielson, S., & Abrutyn, L. (1997). *An Introduction to Using Portfolios in the Classroom (SI)*, 1st Edition distributed by ERIC Clearing House.
- Daro, P. (1996). Standards and Portfolio assessment. In J.B. Baron and D.P. Wolf (Eds) *Performance-Based Student Assessment: Challenges and possibilities*, pp 239-260, Chicago, 11, University of Chicago press.
- DIES (2005). The e-Strategy – Harnessing Technology: Transforming Learning and Children's Services. Available at www.dfes.gov.uk/publication/e-strategy/
- Gardner, H. (1997). Multiple intelligence as a partner in school improvement. *Educational Leadership*, 55(1), 20-21.
- Goldsby, D., & Fazal, M. (2001). Now that your students have created web-based digital portfolios, how do you evaluate them? *Journal of Technology and Teacher Education*, 9(4), 607-616.
- Galtin, L., & Jacob, S. (2002). Standards-based digital portfolios: A Components of authentic assessment for pre-service teacher. *Action in Teacher Education*, 23(4), 28-34.
- Hales, L., & Marshall, J. (2004). *Developing effective assessments to improve teaching and learning*. Norwood, MA: Christopher-Gordon Publishers.
- Hamm, M., & Adams, D. (2011). *Activating assessment for all students: innovative activities, lesson plans, and informative assessment*. Maryland: Rowman and Little Field Education Publishers, Inc.
- Hammerman, E. (2008). *Formative assessment strategies for enhanced learning in science*. Thousand Oaks, CA: Corwin Press.
- Heacox, D. (2002). *Differentiating instruction in the regular classroom. How to reach and teach all learners, grades 3-12*. Minneapolis: Free Spirit Publishing.
- Heath, M. (2002). Electronic portfolio for effective self-assessment. *Teacher Librarian*, 30(1), 19.
- Marsh, C.J. (2009). *Key concept for understanding curriculum* (4th edition), Routledge Taylor & Francis Group.
- Martin, G.P. (2002). Maximizing multiple intelligences through multimedia: A real application of Gardner's theory. *Multimedia Schools*, 7(5), 28-33.
- Mathcentre: www.mathcentre.ac.uk.
- Maths State and OR HE Academy Subject Network: www.mathstore.ac.uk/.

Mills, R.P. (1996). Statewide Portfolio Assessment: The Vermont Experience. In J.B. Baron and P. Wolf (Eds.) *Performance-Based Student Assessment: challenges and possibilities*, pp. 192-214, Chicago II, University of Chicago press.

Montgomery, K. (2000). *Authentic assessment: A guide for elementary teachers*. Boston: Addison-Wesley.

Nitko, A.J. (2000). *Authentic assessment of students*. Upper Saddle River, NJ: Prentice Hall.

Quality Assurance Agency Subject Benchmarking Statements
www.qaa.ac.uk/academic_infrastructure/benchmark/

SPACE project – Self-Student Partnership for Assessment Change and Evaluation: www.Space.ac.uk/.

Salvia, J. (2001). *Assessment*, Boston: Houghton Mifflin.

Stiggins, R.J. (2000). *Student-involved classroom assessment*. Upper Saddle River, NJ: Prentice Hall.

Tomlinson, C. (1999). *The differentiated classroom: Responding to the needs of all learners*, Alexandria, VA: Association for Supervision and Curriculum Development.

Wormmeli, R. (2006). *Fair isn't always equal: Assessing and grading in the differentiated classroom*. Portland, Me: Stenhouse.

Wright, V.H., Stallworth, B.J., & Ray, B. (2002). Challenges of electronic portfolios: Student perceptions and experiences. *Journal of Technology and Teacher Education*, 10(I), 49-61.

www.assessmentinst.com and www.makingstandardswork.com are two websites we often use to explore assessment issues and practices.

USEFUL WEB RESOURCES

Mahara website: mahara.org account.

Search the Higher Education Academy (HEA) resources database under 'Assessment' www.heacademy.ac.uk/resources.asp. In particular, look for the Assessment Series of Briefing Papers on Portfolio

(Source: *Activating Assessment for All Students*, Innovative Activities, Lesson Plans, and Informative Assessment, Mary Hamm and Dennis Adams, Publisher Rowman & Littlefield Education, 2009 pg. 52-53)

<https://rowman.com/ISBN/9781607092087/Activating-Assessment-for-All-Students-Innovative-Activities-Lesson-Plans-and-Informative-Assessment>

Programme: MADE
Course: MDE-412: Instructional Design

Feedback Form

Dear Student,

While studying the Units of this Course MDE-412 'Instructional Design', you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill out and send us the following questionnaire, which pertains to this course. If you find the space provided insufficient, kindly use a separate sheet.

Feedback Questionnaire

Enrollment No.

1. How many hours did you need for studying the Units?

Unit no.	1	2	3	4	n
No. of hours					

2. Please give your reactions to the following items based on your reading of the Blocks/Volume 1/Volume 2:

Items	Excellent	Very Good	Good	Poor	Give specific examples, if poor
<i>Presentation Quality</i>	☐	☐	☐	☐	
<i>Language and Style</i>	☐	☐	☐	☐	
<i>Illustrations Used (diagrams, tables, etc.)</i>	☐	☐	☐	☐	
<i>Conceptual Clarity</i>	☐	☐	☐	☐	
<i>Check Your Progress Questions</i>	☐	☐	☐	☐	
<i>Feedback to CYP Questions</i>	☐	☐	☐	☐	

3. Any other comments:

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Mail the Questionnaire to:
Course Coordinator (MDE-412)
STRIDE, Block-16,
Indira Gandhi National Open
University, Maidan Garhi, New Delhi-
110068, India.
Email: stride@ignou.ac.in