UNIT 1  REFLECTION AND CONTINUING PROFESSIONAL DEVELOPMENT: IMPLICATIONS FOR ONLINE DISTANCE LEARNING

Santosh Panda

Note:
This paper was published in the Indian Journal Open Learning, 2004, 13 (1), 63-77. The paper describes the works of important scholars like John Dewey, Jurgen Habermas, Donald Schon, and Jeniffer Moon and the role of reflection in learning and professional development. The paper also examines the role of ‘reflection’ plays in continuing professional development (CPD), and draws implications for online professional development. It suggests that online CPD is related to individual cognitive structure, community of professional practice, online collaboration, and the cultural contexts of practitioners.

Introduction

Continuing Professional Development

Professional development in any profession has traditionally been considered as a one-time affair in one’s career (i.e. pre-service education); though changing professional needs necessitate in-service/on-the-job professional development the activities of which include either a full-time certificate or diploma or accumulation of credit hours of professional development training or even professional socialisation and dialogue in seminars, roundtables and conferences. In many cases these include a series of unrelated events to meet certain professional requirements of the time, and may not have a life-time professional development/ learning scheme. Professional development, on the other hand, needs to be seen as related to professional practice and culture of continuous learning within a learning organization. The conceptual clarification on professional development given by Guskey (1999) sounds appropriate: “those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students it also involves learning how to redesign educational structures and cultures”(p.16). He also argues that the deficiency approach (i.e. professional development activities to contribute to make up one’s deficiencies of knowledge and skills) is itself deficient, and should cover a wider canvas of continuing professional development (CPD) so as to keep pace with the emerging knowledge base of the profession and its conceptual and craft skills.

Guskey (1999) further notes that continuing professional development, as a process should be:

- **Intentional**: i.e. professional development activities are based on purposes which are linked to broader vision of the profession.
- **Ongoing**: i.e. professional development involves ongoing processes and activities based on horizontal and vertical integration within a dynamic professional field; and
- **Systemic**: i.e. professional development activities, need to be integrated and related to the system where professional practice takes place.
The conceptual clarity on CPD described above has been underlined in the online CPD framework suggested later in this paper, and that it has been related to individual reflection, online collaboration, collaboration in community of practice, and professional culture. In the section below, we examine the contributions of scholars to the role of reflection in learning and continuing professional development in professions, followed by discussion on reflection and personal/professional development in the next section; and take up drawing their implications in relation to online learning, community of practice and individual transformation in professional identity in the subsequent section.

**Reflective Practice and Professional Development**

In what follows is a brief discussion on the role of ‘reflection’ in professional development and professional practice, since it is contended that reflection facilitates professional development. Though not a recognized construct in psychology, it is quite often used in education (especially in professional development), and is used to describe thinking that is meta-cognitive, i.e. thinking about the process of thinking. Moon (1999) views reflection as a mental process that has some purpose or outcome. We describe below the works of important scholars like John Dewey, Jurgen Habermas, Donald Schon, and Jennifer Moon; and the role of reflection in learning and professional development.

**John Dewey**

The work of Dewey (1933) is considered as the beginning of the study and application of reflection. For him, reflection is a kind of thinking, in the process of which one brings the subject to the forefront of the mind and gives a serious thought to this. It is a process of manipulation of knowledge and its reprocessing towards the set goal, and so, it is goal-directed. One ‘thinks’ when in uncertainty or difficulty so as to solve the ‘perplexity’, and the process leads to testing through some action.

Dewey believed that effective education through reflection should aim at ‘making sense of the world’, and therefore, this is related to experience. A distinction between primary experience and secondary experience is made by Dewey – the former is a direct interaction with the material and social environment, and the latter is a reflective experience in which the environment is used as the object of reflection. Miettinen (2000) presents Dewey’s model of reflective thought as follows (Figure 1.1):

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**Fig. 1.1: Model of reflective thought and action (Dewey)**
Dewey’s concept of reflective thought and action, depicted in Figure 1.1, comprises five phases, viz.: i) disturbance and uncertainty, ii) intellectualization, iii) formation of hypothesis, iv) reasoning, and v) hypothesis testing.

Reflective learning, therefore, takes place in problem identification, hypothesis formulation and its testing in action. Reflection and reconstruction of the environment are intimately related therefore, thought constitutes and expresses the individual environment combination and so, Dewey’s conceptions provide the foundation to constructivism in teaching and learning.

Jurgen Habermas

Habermas (1971) studied the nature of knowledge that human beings adopt or generate (i.e. knowledge constitutive interests of human beings), and the use of reflection as one of the processes that human beings adopt in the generation of particular forms of knowledge. The knowledge constitutive interests are of three types: technical/instrumental knowledge constitutive interest, knowledge constitutive interests in hermeneutic disciplines, and emancipatory knowledge constitutive interests. In social sciences, both interpretive processes of enquiry (Which is the basic method) and critical/evaluative processes of enquiry (which provide critique so necessary for self-understanding and critique of the process) are adopted or knowledge generation and interpretation.

He evaluative enquiry is equated to reflection, and the critical theory of social sciences uses questioning and understanding to serve the emancipatory interests. While reflection may not play any role in physical sciences, it is important in case of interpretive enquiry of social sciences and emancipatory interests; and reflection should be used both at stages of interpretive enquiry, and empowerment and emancipation. (Barnett, 1997).

While applying to the context of teaching, Van Manen (1991) suggests for the application of reflection at four levels:

i) Day-to-day application in thinking and acting,

ii) Reflecting on specific events or incidents,

iii) Reflection on personal experience and experience of others, and developing understanding through interpretation (i.e. interpretive enquiry of Habermas), and

iv) Reflecting on reflection, i.e. understanding the nature of knowledge and possible emancipation (i.e. emancipatory interests of Habermas).

Donald Schon

The most widely used theory and application on reflection for professional development is that of Schon, (1983; 1987). In an earlier work, Argyris and Schon (1974) distinguished between ‘expoused theories’ (those that involve the philosophy of the profession and guide professional action) and ‘theories-in-use’ (that the professionals learn about the profession in day-to-day life, and which represent the professional behaviour). They argue that the expoused theories taught to novices to graduate as professionals are rarely applied in professional practices which base on context-specific practical ways of performing the profession, and, therefore, are privately developed by individual professional practitioners. The epistemology of
professional knowledge and practice is guided more by theories-in-use rather than the undeveloped expoused theories; and, practical problem solving in action is more important than the professional rule book.

Schon distinguishes between ‘reflection-in-action’ and ‘reflection-on-action’ the former occurs at the time of action with unexpected consequences and guides the process of professional action through ‘knowledge-in-use’ (derived from theories-in-use, and has very less to do with expoused theories). While the latter occurs when the action has already taken place, and is retrospective. ‘Knowing-in-action’ occurs when the action goes as per expectation. The novices in the professions can be educated under certain conditions to become reflective practitioners when the professional knowing-in-action is contextualised into ‘the particular socially and institutionally structured context of that profession’ (Moon, 1999: 45); and this is largely shared by the community of practitioners. Therefore, the students of the professions should be put to situations of uncertainty so that they practice reflection-in-action (i.e. processing of information during action) and develop through coaching the artistry of the profession in the practicum and with the risk-free environment.

\textit{Jeniffer Moon}

Based on a review and critical appreciation of the previous works on reflection, Moon (1999) provided a model/ map of learning (along with the representation of learning) and the role of reflection in it, which has provided a base to further work on reflection in online professional development.

Moon (1999) critically analysed Schon’s (1983) work to put up her framework/map of learning and the role of reflection in it. Based on the critical appreciation of Schon’s work, she had further drawn on works of others to provide both a theoretical stance and a practical stance for reflective practice in the professions, and therefore for professional development. She points out that further works on that of Schon have theorized Schon’s model and treated reflection-on-action in a much broader fashion than what Schon originally proposed. Subsequently, considerable interest was shown in the use of reflection-in-action in still-evolving disciplines of nursing, education and social work which represent Habermasian hermeneutic knowledge constitutive interests, and for which processes of review, interpretation and reconstruction of ideas are used (rather than facts, as in case of scientific disciplines).

Moon (1999) notes that in the discipline of education, teacher education (rather than teaching or teachers per se) has taken more interest in reflective practice. In other words, reflection has been used more for professional development rather than facilitating student learning. Presenting the theoretical stance on reflection, Moon concluded: “The outcomes of reflection in reflective practice include learning and action, empowerment and emancipation. Reflective practice may also imply the general orientation of being reflective (1999: 65). Further, “The implication is that users of the term need to negotiate and agree the meaning of the term for themselves” (1999: 66).

Moon further notes, on the basis of an earlier work (Moon, 1996) on training for promotion of health, that improvement in both professional practice as well as health promotion should be the goal of reflective practice. On the other hand, professional educators often stress on developing reflection in
students rather than in themselves. Within professional practice, it has been utilized for initial training like that of Schon (1987).

Reflection works through both personal and professional development; the pattern of relationship between the two has been a matter of debate. Moon writes, “While reflection as a term is not much used to describe processes of self-development, that reflection facilitates development and growth of a person is assumed. Reflection could be seen as a tool that facilitates personal learning towards the outcome of personal development which ultimately leads towards empowerment and emancipation” (1999: 88). The work of Moon (1999) on map of learning and the role of reflection is further discussed below to provide a base to our discussion on its implications for distance learning in a later section.

Reflection, and Personal and Professional Development

While some researchers note that professional development and personal development are different matters, Harvey and Knight (1996) and others note that the former is a matter of the latter. Many think that personal or self-development plays some role in professional development. For instance, Winter (1995) contends that professional development depends on the development of self-awareness of a person. Eraut (1994) posits that growth of individual professional behaviour is the result of use of self-knowledge (being conscious of one's knowledge and skills, one's limitations, other sources of knowledge, etc.) through self-management (i.e. 'use of time, prioritization and delegation'). Personal development involves self-awareness, self-improvement, and empowerment and emancipation. In a way, it is the acquisition of new knowledge to further enrich the process of reflection.

Harvey and Knight (1996) plead that mere self-awareness does not involve reflection, rather for reflection to lead to professional development should be extensive to include examination of what we do and why we do it. They contend that the aim of professional development is transformative learning. Moon (1999) writes, “Transformative learning relates also to the meta-critical state necessary for emancipation and, in this second manner, also suggests the progression of self development through the three elements of self-development” (p.82). (the three elements include: self-awareness, self-improvement, and empowerment and emancipation). Vis-a-vis the three elements, Eraut (1994) brings in the constructivist view of learning to explain meaning construction and interpretation of experience; and suggests that one needs a special problem (i.e. more difficult problem) to review one's existing understanding. Mezirow (1990) points out that individuals always try to preserve the sanctity of their meaning or cognitive or meaning structures, and avoid experiences which do not fit into these. Therefore, special efforts are needed to bring in reflection to examine the existing cognitive/meaning structures.

Self-improvement/growth further leads to empowerment and emancipation. Habermas (1971) refers this to the third form of knowledge constitutive interests; Friere (1970) calls this the process of conscientization; and Mezirow (1990) in his transformative learning talks of perspective transformation in which there is critical self-awareness or critical reflection of their presuppositions (on which learning is based) so as to allow for more integrative and inclusive perspective. Moon (1999) writes, “Reflection could be seen as a tool that facilitates personal learning towards the outcome of
personal development which ultimately leads towards empowerment and emancipation” (p.88).

Not much work has been done on linking learning to reflection, though reflection has a significant place in Kolb’s experiential learning, Dewey’s reflective thinking, and Schon’s reflection-in-action and reflection-on-action. Moon (1999) attempts to link reflection to learning and professional development through relating it to a map of learning involving cognitive structure, stages of learning, approaches to learning, and representation of learning. Reflection, as was noted earlier, “is a mental process with purpose and/or outcome that is applied to relatively complicated or unstructured ideas for which there is not an obvious solution” (Moon, 1999: 152). Reflection works more effectively at higher stages of learning like meaning making, working with meaning, and transformative learning. Moon (1999) further notes that reflection is involved in three areas:

i) in new learning due to restructuring of the cognitive structure especially at the stages of ‘meaning making’ where it is equal to ‘reflection-on-action’ and ‘transformative learning’ (where it involves critical overview);

ii) at higher stages of representation of learning due to further manipulation of meaning and for upgrading of learning;

iii) and also in case of upgrading of learning. In the cognitive structure, reflection when is combined with imagination becomes emancipatory a combination of past experience and imagination for future – the idea of Habermas (1971) for emancipation of social groups. Mezirow (1990) also notes that reflection is crucial at the final stages of transformative learning.

Reflection is used at different stages of learning in various models of experiential learning, reflection-on-action, transformative learning, professional development, and others. Those who have applied reflection have considered and emphasized on ‘how’ the process is used and facilitated, rather than the ‘process’ of reflection itself. The purpose of reflection is representation of past experiences and learning, reorganization of present meaning, and improvement of present and future understanding and performance. Reflection has also been crucial in theory building as in case of Schon’s reflective practice and Mezirow’s transformative learning; as also for self - development and emancipation through critical view (overview) of the self and the society.

Nature of Learning

The nature of learning (and learning for professional development) is based on the map of learning presented by Moon (1999) which is “based on the literature on reflection and student learning, supplemented by observation and personal reflection”(p.104). Learning in contexts of both classroom teaching and reflection in professional development needs to be viewed broadly and systematically. The map of learning presented in Figure 1.2 is based on: i) cognitive structure and assimilation of Piaget, 1971; the work on cognitive structure by Ausubel and Robinson, 1969; and constructivist view of learning; ii) critical reflection and transformative learning (Mezirow, 1990, 1991); and iii) approaches to learning developed by the Gothenburg School in the seventies and the University of Lancaster in the eighties (Marton et al, 1984; Marton & Saljo, 1997; Ramsden, 1992), and later by Richardson (2000).
The map given in Figure 1.2 is grounded in the constructivist view of learning in that the focus shifts from the structured teaching of the teacher (where: content and organization of the curriculum is the basis of learning; knowledge is transmitted from the teacher to the learner; learners’ entry behaviour or prior ability and knowledge guide teacher’s teaching strategy; the learner accumulates new ideas and knowledge from outside and replaces with old ones) to learners’ construction of their own knowledge organized in a network called cognitive structure. The learner determines what is to be learnt, and the teacher facilitates that learning. The learner employs his/her cognitive structure to learn from the new materials, and therefore meaningfulness of materials and learning depends on the extent of matching between the material and the learner’s prior learning/cognitive structure. The role of the teacher, therefore, is to carefully design materials for greater liking or the learners, facilitate interaction for greater assimilation of materials, and provide appropriate forms of assessment.

Brown et al (1989) point out that understanding is indexed by experience, and that cognitive experiences should be situated in authentic activities. ‘These activities of the teacher greatly influence students approach to learning, which in turn affects the use of cognitive structure and its movement across the ladder of various stages of learning (from ‘noticing’ to ‘transformative learning’). In case of learner-centered constructivist learning, there is possibility of application of reflection in the process of learning. Suchman (1987) argues that there is nothing like an ultimate shared reality, but rather reality is the outcome of the constructive process of each individual, and therefore, it is construed that, in both individual and group processes of’ learning, reflection plays an important role in facilitating the individual ‘construction’ of meaning and group ‘negotiation’ of meaning ‘.

The cognitive structure given in Figure 1.2 (guidance, assimilation, and accommodation) is spiral in nature, which goes on at every stage of learning (for its original version, see Moon, 1999: 110). Ausubel and Robinson (1969) point out that the cognitive structure- a network of theories, concepts, propositions, facts, data, etc. available to a learner-must relate to the new material of learning and modify/accommodate itself. This is possible if the material is meaningful to the learner - if it is meaningful the learner learns, if not then he/she simply memorizes the material. The cognitive structure stores the newly learnt material, accommodates and readjusts itself in response to new ideas, and actively guides the individual in the learning of
new material. Therefore, in the constructivist view of learning, cognitive structure is central to individual construction of knowledge/meaning, and group negotiation of meaning. Mezirow (1990) uses meaning perspective to explain the role of cognitive structure, and points out that individuals who get trapped in their meaning perspective (and do not open up to new ideas and meanings) should be facilitated to be emancipated - and that’s what transformative learning does, and this is where social construction/negotiation of meaning assumes signification.

Moon (1999) had presented five stages of learning – ranging from noticing to transformative learning in a hierarchical manner – based on the harks of Habermas (1971) Mezirow (1990), and literature on student learning, approaches to learning, and theory of cognitive structure. These are briefly described as follows.

- At the first stage of learning, i.e. noticing the cognitive structure facilitates the individual to notice what is to be learnt; and attitude, motivation and emotion play important roles in this task.

- Once noticed, one proceeds to the stage of making sense, i.e. keep aside the previous knowledge, find out coherence in the present material, try to organize it. And put together the ideas derived from the material.

- This leads to the third stage of learning, i.e. making meaning in which the new material is assimilated into the cognitive structure; one relates it to what is already known; and the cognitive structure accommodates the new meaning derived (i.e. meaningful learning), and relates to its established discipline.

- At the next stage of working with meaning, the learnt materials and the meaning derived become part of the cognitive structure; one reaches a stage where one does not need the learning materials at hand to be able to further think and reflect; this is what is called ‘manipulation of meaningful knowledge of a specified end’ (Moon. 1999: 144); it involves a private process of construction of meaning.

- This leads to the final stage of transformative learning that is more sophisticated than the fourth stage, and where there is extensive use of the cognitive structure. The learner becomes capable of evaluating one’s own frame of reference, and others’ knowledge and process of knowing.

The other aspect of the map is the approach to learning. Starting from the Gothenberg School in Sweden, the further works of Marton et al (1984), Marton and Saljo (1997), Entwistle (1988, 1997), Ramsden (1992), Biggs (1993), and Richardson (2000) have influenced the work on deep and surface (and strategic) approaches to learning, which affect individual learning. In the deep approach, the intention is to understand the ideas by oneself, relate ideas to previous ones, look for patterns and check evidence, critical examination of logic arid argument, and get engaged actively. The surface approach propels one to try to cope with course requirements. By treating course contents as unrelated pieces of knowledge to be memorized (without making any sense) so as to meet the pressure of work.

The approach to learning adopted by the learner determines the best possible representation of learning (BPR) (Figure 2: from ‘memorization’ to
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‘restructured reflection’) vis-a-vis the stages of learning. For instance, even if one has reached the second stage of ‘making sense’ (in the stages of learning), but due to a surface approach adopted, one will be simply reproducing unrelated ideas in the BPR since one cannot relate new learning to the existing one. Deep approach to learning will have greater use of cognitive structure to new materials of learning. Also, the maturity of individuals plays an important role in the approach adopted.

The process of learning is contextualized in the sense that the new material of learning interacts with the cognitive structure and relates to the existing knowledge/ideas about that learning in the cognitive structure. Learning and thinking are not separate from the subject matter of learning, and as Marton and Ramsden (1988) write, “their character should be defined by the imperatives of that subject matter”. Laurillard (1993) writes that the teacher’s design and interpretation of the material shall greatly affect the nature of learning material and therefore student learning. Also, it is important to note that, besides the teacher or any other media, the learner’s cognitive structure will have a bearing too. Therefore, both material designs and learner cognitive structure play important roles in student learning.

As already noted in an earlier section, cognition is a useful construct in psychology while reflection is not. Therefore, there has been very little research on reflection as such, except in areas of professional development. Reflection is applied to complicated or uncertain situations or tasks, though it has been associated with thinking. Swartz (1989) notes that it is concerned with thinking about the process of thinking, i.e. meta-cognitive thinking; and Brookfield (1995) uses it for critical thinking. While reflection could be some form of thinking or cognition, it is certainly narrower than these. However, reflection assumes importance in ordering and reordering of the cognitive structure vis-a-vis the new incoming information, and therefore, in making meaning/transformative learning and professional development.

Reflection in Learning and Professional Development

As has been discussed earlier, reflection is a mental process applied to complicated or unstructured ideas. In the map of learning, reflection may occur to facilitate the cognitive structure to re-accommodate and readjust, and the best possible representation of learning (verbal and non-verbal in self- or structured assessment) can help to further reflect and upgrade the stage of learning.

It may be noted that reflection works in situations of unstructured and complacency, and that it works with meaning - i.e. manipulation of meaning. Therefore, within various stages of learning, reflection is involved at stages of making meaning, working with meaning, and transformative learning. Another possibility is that reflection facilitates the cognitive structure to upgrade one stage of learning like making meaning (which has already taken place) to a higher stage of learning in which the cognitive structure further accommodates what is reflected and therefore re-interpretable-learnt.

The transformative role of reflection at the third and fourth stages of learning may be equated with reflection-on-action, and that of its role as housekeeping where past experiences are brought in combination with some futuristic anticipation so as to derive more meaning or better/different
meaning. At the stage of transformative learning, it involves more critical overview of the situation, and relating it to professional or social situations, and facilitating transformation or, as Habermas (1971) noted, to emancipation (emancipatory human interests). Different strategies have been advocated for this: group consciousness-raising (Mezirow, 1990), critical incident analysis (Brookfield, 1990), learning journals (Moon, 1999), and others.

Jonassen (1994) in the schematic web of constructivism underlines the role of articulation and reflection in both internal negotiation and social negotiation of meaning, and distinguishes between experiential knowledge and reflective knowledge (Jonassen et al, 1995). Garrison and Anderson (2003) further pursued education as inquiry and for inquiry (Lipman 1991), and based on reflective thinking of Dewey (1933), presented the practical inquiry model for online learning in which critical thinking is viewed as ‘an inclusive process of higher-order reflection and discourse’ (p.56). While reflection is in the individual domain, discourse falls within the public domain.

**Implications for Online Distance Learning**

Online distance learning is the latest development within non-classroom based modes of communication and interaction. Throughout the developmental history of distance education - from conventional distance learning to present online distance learning - there had been debates concerning the role independence and interaction play in self learning. Distance learning involves independent learning, and collaboration through mechanisms of learning centers, media and self help groups facilitates interaction, which further facilitates sharing of views, social knowledge construction and negotiation. It is in place to draw attention to the work of Daniel and Marquis (1979) who pleaded that interaction is necessary to socially and culturally ground the content of learning - interaction strengthens independence. Further, the works on approaches to learning revealed that those with deeper approaches to learning were comparatively more independent than others. Increasing ‘independence’ coupled with greater ‘control’ over learning lead to higher academic integration and higher order learning.

Individual responsibility and social responsibility of learning have been advocated by Garrison and Anderson (2003) through individual critical thinking and discourse in the community of inquiry respectively. Based on the discussions in the preceding section, in the framework of online CPD given below, we contended that reflection takes care of both the roles of individual and social discourse in both online and offline contexts leading to enhancement of individual cognitive structure. The role of reflection in distance learning is suggested in Figure 1.3 in which both individual presence and curriculum design presence determine the learning approaches adopted.

These significantly influence the stages of learning one is going through as also how learning is being represented. Both mentoring and individual/group reflection facilitate appropriate learning approaches, stages of learning and up gradation of learning. Reflection plays a critical role in the change of cognitive structure through independent study, online collaboration and negotiation, and knowledge construction and negotiation in the community of practice.
Comford and Pollock (2002) in a critical work contend the conventional campus as a resourceful constraint, and posit that inspite of the limitation of the campus, it performs certain higher order functions which virtual/distributed learning may not: mutual peer surveillance, lateral relationships between teachers, and continually reconstructed knowledge pool. These, coupled with the fact that professional development is a continuing process and that much of this development takes place offline, suggest that there is the necessity of offline individual reflection and collaborative negotiation in the community of professional practice. How do independence and interaction fit into this interpretation? Thorpe (2002) contends that while interaction was earlier used to foster independence, now one has immense possibility of online interaction while still maintaining one’s independence, and that independent study is used to support and sustain interaction. Garrison and Anderson (2003) take the discussion on discourse and meaning making in online learning community further through their framework of cognitive presence, teaching presence and social presence (Figure 1.4).
In their online community of inquiry, cognitive independence and social interdependence occur simultaneously. In this community, individuals have full responsibility and control of their learning while diagnosing misconceptions, challenging accepted beliefs, and negotiating meaning. Their model suggests to us that within the individual cognitive structure, one can maintain independence and employ reflection even while undertaking online and offline collaboration.

Even if professional practitioners interact online and undertake individual reflection, their interaction should take place in the community of practice. While there is no denying the fact that the community of practice by itself exists, what is important is organized effort to develop the sense of community in the professional community of practitioners. Wenger’s (1998) social theory of learning advocates legitimate peripheral participation in which the participation leads to transformation of identity in a community of practice. Identity of participation is required for learning, and learning leads to formation of professional identity. For him, learning as social participation comprises meaning, practice, community, and identity; and shared enterprise is the motto the community of practice. Based on this concept of community of practice, as also the conceptual formulation of situated cognition and situated learning (Brown et al, 1989) a framework for online constructivist continuing professional development is given in Figure 1.5.

![Diagram](image)

**Fig. 1.5: Online constructivist professional development**  
(Source: Panda, 2003)

Figure 1.5 articulates a transformative learning environment in which reflection plays a critical role. In transformative learning, one must be aware of one’s own and others’ assumptions, and transform one’s own frames of reference so as to best appreciate one’s own experiences. It may be noted from Figure 5 that course design and course content constantly interact with the individual cognitive structure and learning, and individual reflection facilitates transformative learning, and personal and professional development and identity. This process both takes place and is facilitated by community of practice and situated learning on the one hand. And online collaboration, interaction and mentoring on the other. What is important is that for online constructive professional development to happen, the course
design presence, individual cognitive presence, social interaction presence in both online learning community and offline community of practice, mentoring presence, and ongoing framework of transformation of professional identity need to be designed. These aspects have been articulated in the further works of the author (Panda, 2004a, 2004b).

REFERENCES


Staff Development Experiences


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UNIT 2  REFLECTIVE ONLINE RESOURCES FOR ONLINE PROFESSIONAL DEVELOPMENT

Santosh Panda and Sanjaya Mishra

Note:
This article was published in Interactive Discourse, May/June 2008, Vol.1, Issue 2. The article reports on a review on designing and presenting online reflective resources for online continuing professional development (online CPD). While reading this article you will note that the online resources have been categorized into five elements: orientation and organization tools, learning activity tools, interaction and collaboration tools, support tools, and analytic tools. The authors have reviewed and analyzed various research studies to exemplify and strengthen the design of reflective resources for online continuing professional development. In their concluding remarks the authors have noted that further research is needed in-context to establish the effectiveness of the reflective online resources designed using the five tools in this paper. After having gone through this paper, you must develop clear understanding about different elements in online resources and may think of using these in future in the most appropriate manner in your situation.

Introduction
With increasing use of the web for online learning, training and continuing professional development, theoretical discourses on the nature and process of online learning are coming to the fore as frameworks for design and development of online learning resources. These discourses, though rare, guide the practitioners and researchers in further articulating any online learning framework and design of various resources within that. The Inquiry Learning Forum (e-ILF) of Barab, Makinster and Scheckler (2003), for instance, is a web-based professional development system to support community of practice (CoP) of teachers. The e-ILF was used as an extension of face-to-face (F2F) workshops and/or as an extension of online interactions to develop relationships outside it. Four principles of design supported the framework: fostering ownership and participation, focusing on inquiry, visiting classrooms through video streaming and web-based technologies to situate in social context, and online learning community support around collective experience and practice. In Salmon’s (2004) model, there are five stages of e-moderating: access and motivation, online socialization, information exchange, and knowledge construction and development. At stage five, the participants are also encouraged to reflect on the process of their learning. In a recent work, Anderson (2003) combined two models – community of enquiry, and independent learning through structured learning resources – in delineating interaction and interactive learning on the semantic web. Design of online resources through cognitive presence, teaching presence and social presence was crucial in the model. It has been argued that since student learning online is greatly influenced by their perception of teachers’ interactivity, strong teacher presence and professional development is essential in order to maintain a sustainable online learning community (Wilson and Stacey 2004). Both online and offline interactions are required for knowledge construction and formation of identity in the community; and so also the formation of professional development community and its convergence with the offline community of practice by the online facilitators/mentors (Barab, Makinster and Scheckler, 2003) as well
as continuous peer evaluation (Gustafson & Gibbs, 2000) are essential to effective and sustainable continuing professional development. Studies conducted in the recent past have shown that critical thinking and/or critical enquiry are essential ingredients to a higher order professional learning community poised towards transformative learning and transformation of professional identity (Salmon 2000; Anderson 2003; Barab, Makinster and Scheckler 2003). It has also been argued further that reflection and reflective practice facilitate this process towards quality learning and quality professional practice (Schon 1987; Valli 1992; Moon 1999; Cowan 1998, 2002; Anderson 2003). ‘Reflection-in-action’, ‘reflection-on-action’ (Schon 1987) and ‘reflection-for-action’ (Cowan 1998) are suggested as pre-requisites for:

- enhancing learning for professional development;
- individual knowledge construction;
- collaborative social construction and negotiation of meaning online within the CoP (Panda and Juwah 2006).

Current research in the field, besides other dimensions, has focussed on how the online resources can be properly designed so as to ensure criticality and creativity in CPD. This paper reports on a review of design of online reflective resources to facilitate online educators and trainers in building ‘reflection’ into the process of professional development and transformation of professional practice.

**Online CPD: a framework**

It is essential that frameworks for online continuing professional development (CPD) are developed within which design of learning resources can be located. In a recently work, a training needs analysis (Panda 2004b) was carried out to discern the CPD needs of educators, their preference for constructivist online professional development, and views on the role of reflection and experimental learning in online CPD. An online constructivist CPD (online CPD) framework was developed and evaluated as commented by educators having access to the web. The results of the study suggested that “there should be inter-disciplinary approach to design, development, and application of curricula; the online activities need to be combined with reflective practice in the offline community of practice; activities and tasks need to be grounded in context; and there should be provision for networking and exchange in the community of practice” (Panda 2004b p.117).

Figure 2.1 presents the framework for an online constructivist CPD. For a detailed discussion on the framework see Panda 2003, 2004a; Panda and Juwah 2006. The essence of the framework suggests that the individual cognitive structure of the professional is shaped by culture, previous learning/education (which is situated), and the community of practice in which the professional works. The cognitive structure also undergoes transformation through collaborative interaction in online learning environment. The variables that affect the professional cognitive structure and professional identity include: individual CPD needs, and perception of the value of professional development and its organization; design presence of the curriculum and the course content; cognitive presence (i.e. the intellectual environment in which the professionals individually and collectively construct knowledge and negotiate meaning—the nature of collaboration, interaction and engagement—and which leads towards meaning making and transformative learning); teaching presence through direct instruction, and mentoring and facilitation of discourse/ reflection by
the instructor/mentor; and social presence of the participants and the mentor. The online discourse and reflection are also generally affected by culture, the extent of situatedness of learning, the professional community of practice, and other social influences. Also, a deeper approach to learning, and further facilitation by the mentor to encourage reflection at various phases of learning and learning activities (including self-learning, and collaborative community project) further enhance/upgrade learning towards more meaningful and transformative learning, and transformation of professional identity.

The framework given in Figure 2.1 suggests that in online professional development the individual cognitive structure and professional identity of the professional undergo change and transformation through self-learning and reflection, and collaborative case-based projects in the community of practice, besides collaboration and interaction in the online learning environment. It is argued that knowledge construction and negotiation of meaning is as much the outcome of individual reflection (i.e. internal construction and negotiation) as that of social construction and negotiation. While case/work-based project work ensures identification with the community, the negotiation of meaning involves both participation and ratification. Therefore, participation, negotiation and ratification together contribute to ratification and transformation of the cognitive structure. Much of professional learning takes place at, besides the online learning community, the community of practice and through individual self-study and reflection. Therefore, any designs for online constructivist professional development programme must take into account all of these variables, and situate the learning experiences in culture, context and professional community of practice. It is underlined that individual reflection can enhance the quality of learning experience and lead towards enhanced transformative learning, professional identity, empowerment and emancipation.

Fig. 2.1: Constructivist online continuing professional development: a framework

Framework for online reflective resources

The Online CPD framework (Figure 2.1) articulated interplay of self reflection, online collaborative interaction and reflection, and collaborative projects in the community of practice towards continuing professional development. Based on the design of and the inter-related variables associated with online professional development, a review of design of reflective online learning resources is presented and discussed in this section. The classification of online learning resources into five elements/tools as given in Figure 2.2 can form the basis to further develop online professional development programmes in any professional area. It may be noted that this review is exclusive to the interaction of the online learning community in which individual and group ‘reflection’ play a crucial role. For developing a comprehensive CPD programmes, this should be combined with individual self-learning and collaborative and reflective projects within the offline community of practice.

An ideal web-based course site includes different elements that are made ‘easily accessible’ to provide additional information. Some of these elements (Williams 2002) include the following:

- Course outline
- Calendar of activities, deadlines
- Activities, assignments
- Explanation of concepts, modules
- Links to additional resources
- Notice boards, announcements
- Conferences, discussion groups
- Email
- Online access to library
- Student profiles, etc.

We have categorised the different elements in an online learning resources into five tools:

- Orientation and organization tools
Figure 2.2 shows the varieties of online resources that can be provided to the online professionals, and what constitute the online learning environment. Though the framework may look like any other framework for online learning, the difference lies in how these components are designed from the point of view of building reflection into the activities, as also promote reflection so that transformative learning and transformation in identity and professional practice take place. Further, these components need to be grounded in context, and linked with collaborative projects in the community of practice. The five components of the online learning resources environment are described as follows.

**Orientation and organisation tools**

These are a set of online tools that helps the reflective practitioner to get oriented to the community of practice and develop confidence by organising his/her own learning space. This set of tools supports the motivational approach of Keller’s (1979) Attention–Confidence–Relevance–Satisfaction cycle. The suggested tools in this group are:

- Welcome and calendar
- Instructor and learning community
- Concept map
- Syllabus
- Online CPD framework

1) **Welcome and Calendar:** This is an introduction/welcome by the mentor/course facilitator who provides an overview of the professional development programme by highlighting the significant objectives and the activities to be performed by each participant. This is essentially a web page that establishes the relevance of the whole exercise. This also provides detailed calendar of activities; also, this broadly lists through icons what the learning environment looks like. The calendar is also a personal organizer for the user who can store important personal information to organize his/her learning.

2) **Instructor and Learning Community:** This space is devoted to an introduction to the instructor/mentor and the participants. While the mentor brings in his/her expectations of the participation focusing on transformative learning and reflective practice, each of the participants outlines his/her perception, expectation, learner characteristics, the problems faced in professional practice, and views on how these can be addressed. These could be brought forth again at the time of asynchronous conferencing for them to look back and reflect on what they had said and relate to what they have achieved. This also ensures ‘dialogue’ in the process. This corner also provides guidelines on developing skills of communication and meaning making online. This is the introduction space of the online environment where the participants get to know each other and develop a sense of belonging and mutual commitment (Wenger 2002). This space could be a page with information and photograph of the participants and/or support by
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a bulletin board/discussion forum to which the participants can post their introductory messages and develop rapport amongst each other. However, the use of photographs in online community may expose an insecurity of a participant, and also could cause a participant feel incompatible and self-conscious due to various reasons including age, colour and looks (Hand 1999).

3) Concept Map: Concept mapping (Novak 1998) is a technique by which “mind maps” or “concept maps” are generated to help individuals explore their knowledge and understanding for themselves or share their views with others (Hugs and Hay 2001). It is “explicitly embedded within a constructivist approach to teaching with the aim of facilitating meaningful learning” (Kinchin 2006, p. 79). A concept map is a graphical representation of a concept showing directional links amongst sub-concepts and establishing hierarchical relationships of terms to facilitate clear understanding. “The purpose of concept mapping is not the production of a map which represents in absolute terms the relationships between concepts, but the production of a visual layout, which can make that specific issues clearer – and certainly more understandable – to the learner who produced the map” (Cicognani 2000 p. 154). Concept maps can be used

- as an advance organiser;
- as a tool to check whether learners have understood a concept;
- to promote discussion; and
- to collaboratively develop common understanding and strategy.

Concept maps have been found useful for web designers generally (Hughes and Hay 2001) and also for conducting workshops (Chan 1998) and in online learning (Cicognani 2000, Luckie et al. 2004).

Concept map of a whole programme can be presented with linkages drawn for various courses and modules, along with the type of relationship shown, as also the place of all the activities within the curricular concept map. Concept maps can be used for monitoring personal meanings, comparing meanings and connotations of ideas, and expressing assumptions that underline ideas; even, participants may be encouraged to draw their own concept maps based on their perceptions of professional practices. ‘Inspiration’ as a software/tool can facilitate drawing of these maps.

4) Syllabus: The design of the syllabus/curriculum is the most important aspect of this exercise, since this determines the whole process of online constructivist continuing professional development. While culture plays a significant role in online learning (Gunawardena et al. 2003), Sanchez and Gunawardena (1998) suggest that to meet cultural variations and individual learning styles, the best strategy would be to provide as many alternative activities as possible to achieve the same goal of learning. A reflective curriculum should bring in and also build on the context of professional practice, the expectations of renewed professional practice, the perceptions of the participants, and grounding of the content in the existing professional experience of the CoP. Cultural pluralism can be addressed by bringing in a variety of values, social roles and networks, diversity within the CoP and diversity in perceptions of learning and learning styles.
Online CPD Framework: The design, nature and implementation of Online CPD should enable the participants to clarify what aspects of development they wish to engage in. This also provides clarity to both mentor(s) and participants on what experiences to be brought in, and what tasks and reflective practices one will be engaged in within the online learning environment and within the collaborative project of the CoP. Presentation of the CPD framework a priori facilitates discussion and buy-in of the concepts and practices at the beginning stage. It also helps in building a common understanding of the key concepts and phrases used, particularly to clarify the conceptions of learning on which the framework is based.

Learning activity tools

The function of these tools is to enhance learning, and, thus, all components included can be treated as learning activities. However, within this category, we group a set of activities as learning activity tools primarily because these are related to development of new knowledge and skills that a professional would like to undertake during his/her professional practice. These tools are:

- Module (in different formats: HTML, PDF, MP3 etc)
- Activity: Self-assessment questions (SAQs) and tasks
- Activity: Assignments
- Activity: Cases and community projects
- Action research
- Reflective journal

The learning activity tools are what Chacon (1992) emphasized as ‘information processing’ mode of computer use in distance education. These tools help the reflective practitioner to learn with the principle ‘I learn by doing’, which means that the user actually interacts with the resources to read, interpret and reflect to develop his/her own conceptions of the subject matter.

Module: Course modules are important ingredients of online learning and reflective engagement. The framework of AMOEBA (adaptive, meaningful, organic, environmental-based architecture) for online course design given by Gunawardena et al. (2003) should be extremely useful for developing content and designing learning activities. The varieties of choices to be provided in the module design include: language, format, communication, activity, methods, and knowledge construction. These also need to be embedded into the existing content and experience of the professional community of practice, and bring in reflection to the forefront of self-study and group discourse. While the instructors or mentors or instructional designers may bring in their views of the world and means of acting within it to the design of learning materials (Gunawardena et al 2003), they have also to guard against any such bias as well as their own views on what the real world would look like for pre-authentication of materials (Petraglia 1998). Besides selection and presentation of module content, each module may list its goals, study guide, assignments and reflective activities, and their linkage to various online tasks relating to self-study and the community of practice. The modules may be made available as HTML web pages, Acrobat PDF files, MP3 files and multimedia formats such as Flash.

Activity: SAQs: The self-assessment questions (SAQ) or activities are
meant to engage the participants in writing down responses to the given questions, and examine against the given content if they have understood and assimilated the important concepts. The participants may like to post the responses to the mentor for comments and guidance. However, this is essentially a facility that helps the user to develop mastery learning of the concepts through continuous drill and practice. The system provides automatic responses based on user intervention with self-assessment questions.

3) **Activity: Assignment:** Assignments for working off-line and discussing online may be designed in a manner that encourages critical reflection, transformative learning, and reflective practice. Such tasks, based on existing professional practices in-context, i.e. practices, beliefs, and expectations that the mentor puts to test by asking thoughtful questions, encourage reflective experience; put the participants to engage in reflective inquiry, among others.

Assignments may also include literature survey and review, critique on each other’s work or selected articles of important practitioners and researchers. Such an exercise may involve summarising the materials (individually and in groups), outlining the main points, arguing for or against, generating questions for discussion and deeper learning, establishing relationships of concepts and meanings, deriving problems and issues, and even undertaking a critical incident analysis (i.e. revisiting already learnt or experienced concept or event). All these provide reflective atmosphere and also generate reflection.

4) **Activity: Cases and Community Projects:** This refers to the collaborative projects undertaken in the community of practice, and is strongly linked to the transformative learning goals for the online learning community. Opportunity is provided for joint exploration, critical evaluation of existing practices, reflecting on new possibilities, and further developing projects and action plans that intend to improve professional practice. This also involves exchanging resources, sharing knowledge, challenging contributions of others, monitoring each other’s work and progress, and working towards a joint product. This part of the activity, which takes place offline, needs to be comprehensively integrated with online collaboration and discourse, and should together articulate further reflection and therefore enhanced professional practice.

5) **Action Research:** It has been well articulated by van Halen-Faber that “A learner whose learning is personal and reflective exists happily within the framework of the constructivist view of teaching and learning. It is not surprising that for educators who embrace the constructivist paradigm, terms such as critical reflection, transformative learning, and reflective practice are familiar” (1997 p.51). Action research, based on existing professional practice, facilitates reflective practice. Working and reflecting on the ongoing professional activities on-the-job, activities of clients/students, the dynamics of interpersonal relationship and group dynamics, the style of administration and management—all provide opportunities for critical reflection-on-action (Schon 1987). Action research must be based on a social practice for investigation, inter-relationship and self-criticality of the stages of research cycle, and involvement of practitioners in the process of research (Carr and Kemmis 1986). Action research projects may follow the steps of planning, acting, observing, and reflecting within each cycle (Kember et al. 2000).
6) Reflective Online Resources

Reflective Journal: Practitioners may be encouraged to engage in narratives in terms of telling stories of their experiences. “With each story retold, the narrator grows and develops...New meaning arises out of old experiences” (van Halen-Faber 1997 p.52). Writing-to-learn facilitates professional growth. Journals can be in the form of logbook, diary, workbook, reflective writing, or even progress profile, written/maintained over a period of time. Looking back into the reflective journal provides opportunity to connect ideas, find coherence, and derive deeper meaning. One frees oneself and finds one’s voice while writing; it is meta-cognitive since it involves self-inquiry. Online reflective journals can take the form of a “blog” or “weblog”. Blogs are used to encourage writing, and being available to a wider community than a discussion forum. The accessibility of blogs makes them very motivating for the users. Blogs are like personal websites that any user can create without going through the hassle of knowing HTML codes and daily updating. Users of the blog can even receive updates through the use of RSS (Really Simple Syndication) or news aggregator (Hernandez-Ramos 2004). According to Roberts (2003) plain text blogs are perfectly adequate to promote reflective practice. Mishra and Jain (2002) used online dairy as a tool to promote reflection amongst practitioners of resettlement and rehabilitation. Qualified mentors provided feedback on the online diary (i.e. on reflections) prepared by learners at different point of time during the programme. Hernandez-Ramos (2004) also concluded that reflective journal writing provides the instructors an opportunity to peep into the mind of the student practitioners and assess the degree to which they are making progress towards their learning goal. Being a personalized area, practitioners also develop pride and confidence in showcasing their learning to others.

Interaction and collaboration tools

The Internet and World Wide Web (WWW) have become significant components of education particularly due to the opportunities they provide for interaction and collaboration. Two types of interactions are possible on the Internet based on ‘time’. Interaction can be synchronous (i.e. it occurs in real time) or asynchronous (where there is a time lag between sending, receiving, and replying). Because of these tools, the online learning environment promotes collaborative learning, where participants work together online to solve complex problems and complete authentic tasks (Reeves et al. 2004). Research shows that students learn more and had favourable attitudes towards learning when working in small collaborative groups than in either technology-mediated learning environment or traditional classrooms (Lou et al. 2001). Research by Jung et al. (2002) on interaction in web-based instruction showed that the social interaction group outperformed the other groups, and the collaborative interaction group expressed highest level of satisfaction with their learning process. Findings of this study indicate that web-based courses should incorporate various types of interaction including social, collaborative and academic interaction. Salmon (2002) referred these interactions as e-tivities that can be organized through both synchronous and asynchronous technologies. According to her, e-tivities are purposeful to motivate and engage the participants in serious learning. We included the use of the following seven tools in the online resources framework:

- Email
- Discussion forum
- Online chat
• Participant corner (social)
• Wiki
• Web-based video conference
• White-board

1) **Email**: Email has become a de facto standard in interaction and collaboration. The system should provide internal email facility to provide mail to the mentor, individual participants and also to all as a group. It would be further useful, if the internal email can also handle attachment of files. In an earlier study, Watt (1995) reported that teaching through electronic mail should be supported by other communication media, and it is useful to send course materials to the participants and do large mailings quickly.

2) **Discussion Forum**: Students are expected to share experiences, negotiate meanings, and construct knowledge within discussion forums (Moore and Marra 2005). Online discussions can play a critical role in web-based courses by helping learners to construct knowledge (Jeong 2003). Discussion forum encourages and engages, through teaching, cognitive and social presence, reflection in participants for higher order thinking and critical reflection. Owen (1993) writes, “Asynchronous communication is, in my view, essentially reflective and responsive communication...Capturing, or downloading the electronic text for reading off-line, or in printed form, for instance, is something we encourage our students to do so that they may feel free to contribute to whatever ways they find appropriate and at times when they feel it is appropriate as well. I believe this happens best when people have had a chance to reflect on their experience, consider the language they would choose to express their ideas, and compose their ideas to their own satisfaction” (p.141). Sometimes, the participants may be encouraged to initiate, lead, and conclude asynchronous discussion on self-chosen topics. This provides more opportunity for deeper thinking and self-reflection. Discussion forums are generally meant to motivate for self-study, have a group feeling, and an opportunity to express one’s ideas and views and also to critique those ideas. LaPointe and Gunawardena (2004) concluded that through online discussion forums, classmates shared experiences and interpretations. They encountered differences, which resulted in a zone of proximal development (Vygotsky 1978) and served as the scaffolding to help students clear their confusion, learn more and gain new understandings. However, using personality type as analysis, Lee and Lee (2006) emphasized that extrovert learners participate in discussion forums actively as they tend to enjoy learning with cooperation and through cooperative problem solving. They suggested that group formation in discussion forum should take into account participants’ personality, and a mixed group is preferred than a coherent one.

3) **Online Chat**: Since chatting is online and in real time, such a facility may be utilized to understand each one of the community better, and for instant dialogue and clarification on each other’s understanding/perception of the same phenomenon. Online chat may both precede and succeed a discussion forum. Chatting can be used effectively as tutorials on one-to-one basis or in a group situation. However, if the participants are from different time zones, it becomes difficult to organize. Some participants also feel uncomfortable with chat due to inadequacy of language of discourse or in effective use of technology
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4) Participants’ Corner: This provides an opportunity to each of the participating professional to place one’s views, ideas, further comments, critical reviews and even full article in the corner. Participants have full freedom to interact with each other, and exchange ideas and construct/negotiate knowledge/meaning, irrespective of whether or not the mentor contributes to the debate. Many a time the participants’ corner also serves as a social meeting point that enhances participant interaction. Jacques (1991) identified a list of social functions that can be accommodated within the online forum. These social functions are: encouraging, mediating, gate-keeping, following, relieving tension, initiating, information seeking and giving, clarifying, elaborating, coordinating, orienting, testing and summarizing. The informal environment provided by the participants’ corner without the overseeing of a mentor would create conversation, commitment and greater enjoyment for the learner (Maor 2003). Research by Gunawardena and Zittle (1997) show that students engage in various activities online to also enhance their socio-emotional experience.

5) Wiki: Wikis are like a combination of a website and a word document. Without the knowledge of HTML the users of wiki can even edit the content. Thus, users can add, delete and edit content on a wiki site. Therefore, wikis are excellent tools for collaboration in an online environment (Augar et al. 2004). Wiki gives real power to groups to collaborate and work on content using a standard web browser. An interesting aspect of wiki is that while the latest version is visible after editing/deleting the content the older versions are also archived and can be retrieved if and when required. Thus, the progress of a group project can be tracked and the involvement of each member can be assessed. Cress and Kimmerle (2008) demonstrate that individual learning happens in a wiki due to internal processes of assimilation and accommodation, whereas changes in a wiki happen due to activities of external assimilation and accommodation leading to collaborative knowledge building.

6) Web-based Video Conference: The use of full motion video to see and hear two or more persons in two or more locations is referred to as video conferencing. It could be delivered through two types of technologies: Internet Protocol (IP) based, and Integrated Services Digital Network (ISDN) based (Acar 2007). It could also be room-based or desktop-based. However, with the growth of Internet and WWW, the use of desktop IP based video-teleconferencing has increased in education to provide synchronous visual inputs. Web-based video conference promotes reflection through synchronous communication, narratives, debriefings, one to one and group supervision, etc. It allows partnerships among peers, exchange perspectives and gain understanding in a collaborative manner (Daley et al. 2008). However, video conferencing sessions are often critically dependent on the expertise of the facilitator, who normally retains the control (Hedestig and Kaptelinin 2005). In a study on success factors in videoconference mediated instructions, (Selim 2005) concluded that technology reliability, learners’ perceived usefulness of the system and learners...
benefit in terms of grades, and course work quality improvement are critical to the success of video conference. In a recent study, Stafford and Lindsey (2007) concluded that the Internet enabled videoconferences appeal more to socially-oriented students that they do to students with a low social orientation. Fung and Woodruff (2003) after analysing the use of digitized video for professional development of teachers concluded that teacher’s professional frames: content (subject matter expert), form (teacher-technician), pedagogy (master teacher), and media (video producer) allow them to look at video from different perspectives. Thus, the use of videoconferencing for CPD would be highly useful for promoting social presence, reflection and collaborative learning. Also, it is important to note that costs are lower for IP than Asynchronous Transfer Mode (ATM) based videoconferences (Acar 2007).

7) White Board: The use of electronic whiteboard in conventional classrooms is probably the most significant change in classroom learning in the last decade. But, in spite of increased motivation of teachers and students in the classroom there seems to have little measurable impact on student achievement (Higgins et al. 2007). On the web, white board is primarily used as an ‘add on’ to the synchronous videoconferences to create virtual classrooms. The use of ‘whiteboard’ or a ‘scratch pad’ along side the synchronous communication system allows all participants to see each other, talk to each other, and permit them to share the whiteboard to draw, write and present prepared materials from multiple sites (Plagemann and Goebel 1999). Thus, it creates a classroom like familiar situation both for the students and the teacher. The visual medium can promote reflection through collaborative interaction, brainstorming sessions and group project work in real-time mode. It is also successfully used in collaborative course development (Tsai et al. 2006). Using the synchronous whiteboard, instructors in a medical education scenario could spontaneously interact with the students. The study showed that the final mean scores for both the on and off-campus students were similar. This result leads Oz (2005) to recommend the use of synchronous broadcast lesson over the Internet as a useful technique for teaching medicine to remote places. Beaumont-Kerridge (2007) described a system of synchronous conferencing system with whiteboard (Voice Internet Protocol Extended Reach, VIPER as commercial name) and reported the evaluation of the system as more engaging due to visual appeal, interaction and the web-browser capture facility. Thus, as in the use of videoconferencing, whiteboard can also be an important resource for collaboration and reflection in online professional development.

Support tools
In so far as professional development is concerned, everything that has been proposed in this framework can also be considered as support tools. However, within the context of the framework and a specific continuing professional development programme delivered online, it is essential that some specialized support mechanisms are in-built to address the needs for adult, isolated and independent learners. The online environment demands high self-direction and autonomy of the participants to take responsibility of their own learning, but they may need assistance in achieving this skill (McLoughlin and Luca 2002). Williams (2002) identified three levels of support to implement online courses successfully:
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- Provision of good technical support;
- Training in new technical skills and familiarity with new learning environment; and
- Understanding and accepting new ways of learning and teaching.

The support or scaffolding techniques used online are built into the technology so as to elevate the learners’ cognitive level and develop skills necessary for efficient operation of the system (Bellefeuille 2006). In the online resources framework, we considered the following as support tools:

- Mentor support
- Technical support
- Web resources
- Search engines
- Online dictionary and thesaurus
- Netiquettes and emoticons

1) **Mentor Support:** While the mentors provide support to enable participants to further reflect on their learning, they themselves also need training on experiencing personal and collaborative reflection and building CoPs (Salmon 2002). Salmon’s work (2000) provides comprehensive guidelines on how to organize e-moderation. The mentor must ensure that some participants who are able to personally reflect but may not post messages are encouraged and enabled to do so. Also, mentor support should ensure that not only are participants able to engage in reflection, but more importantly that they use reflection for further enhancing their learning towards in-depth meaning making and transformative learning (Moon 1999). As Orsini-Jones and Davidson (1999) point out, this is possible only when the mentors are also engaged in reflective practice. One most important aspect is to recognize the difference between reflecting while working online, and more possibility of reflection while downloading material, resources and messages, and working offline. The latter is most significant in enhancing reflective participation and reflective practice. Sinclair (2003) reported that for successful mentoring online, it is important to engage with the principles of mentoring, use set of authentic activities and assessment tasks that encourage higher order thinking (reflection).

2) **Technical Support:** This section provides for all kinds of help required to take care of technology use in online learning itself. This is highly significant, as many adult professional practitioners many not feel comfortable with technology. Therefore, the technical support section clearly informs the users about the technical requirements of the user computers and how to get in touch in case a problem arises. There should be 24 X 7 online supports through telephone, email and possibly through real-time audio-chat through “Skype” or any other VOIP technology. Technical support is essentially a user guide page to which participants can refer for troubleshooting.

3) **Web Resources:** The web resources are in fact additional links to a variety of web-based literature relating to the topics of study/discussion, which the participants may like to draw on depending on their level of difficulty/discourse. Web resources provide additional opportunity for self-study, self-analysis, and self-reflection. These resources may also
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include links to resources on the methods (e.g. distance education, online), CPD strategies, links to professional development associations and organizations, and literature databases and online libraries. The system may be such that participants can add new resources into specific categories with annotations/comments of their own and others to reflect on their usability in different contexts.

4) **Search Engines:** Empowering users to search the web is an important aspect of developing independent online learning. The abundance of information available on the WWW makes it difficult for the online learner to differentiate authentic and useful information and those that are not. Exposure to current, authentic information available through websites can provide students with environments that support inquiry-based and constructivist learning (Oliver 2000). However, research indicates that students’ ability to use hypermedia based information systems are influenced by factors such as prior knowledge and self-regulation (MacGregor 1999). The participants may know how to navigate and surf the Internet, but they may also “lack strategies necessary to efficiently and effectively negotiate the reams of available information” (MacGregor and Lou 2005 p. 162). In the online resource framework, we emphasized this aspect to facilitate the process of self-regulated learning on the net (Rogers and Swan 2004).

5) **Online Dictionary and Thesaurus:** A link may be provided to existing online dictionary and thesaurus on the subject and common dictionary on languages. This may also include links to subject specific glossaries and handbooks available online.

6) **Netiquettes and Emoticons:** Online netiquettes are important rules and regulations to be followed for a clear, convenient, easily communicable, understandable, and safe online communication. These are essential to avoid misunderstandings and undesirable discussions on the Internet that may affect learning (see http://www.onlinenetiquette.com for more details).

Part of netiquettes is also about effective use of emoticons. The online resources framework also includes all kinds of emoticons that can be used by the participants and the mentor to symbolically express their feelings, attitude, emotions and perceptions in a text-based communication. Emoticons are used mostly for computer-mediated communications (e.g. email, discussion groups) (Walther and D’Addario 2001, Krohn 2004). Sixl-Daniell and Williams (n.d.) emphasize that the use of paralinguistic cues such as emoticons are highly useful to avoid miscommunication in multicultural settings.

**Analytic tools**

In order to review progress and improve professional practice further, it is necessary to critically analyze the learning process itself. We believe that the analytical tools suggested in the framework would facilitate both formative and summative evaluation. These will also help the participants to assess themselves and receive feedback from their mentors on how they are progressing. Being online, it also has the advantage of showing the progress of the participant over a time period and in comparison to others in the group.
We suggested the following analytic tools:

- Model evaluation
- Module evaluation
- Teaching evaluation
- Satisfaction
- Process reflection
- Learning assessment

1) **Model Evaluation:** This provides the participants with the opportunity to individually and/or collectively evaluate the online professional development model adopted in the whole programme, and to provide feedback based on their critical reflection of the entire process on what worked and what didn’t, and what needs to be improved upon. This may also be undertaken at various stages of the process; and involves the participants not only in critiquing the design of the professional development programme, but also to self-reflect as to how they would like to perform in their role as professional developers. Regular web-based surveys are recommended for this purpose.

2) **Module Evaluation:** This provides space for evaluating various aspects of the modules—content, presentation, activities, and others — so that the modules reflect current knowledge and practice. This may provide opportunity to orient the modules to individual and group needs on-the-course, and further enhance reflective interaction by self and in groups online as well as offline. It is important to provide continuously data on the usage and performance of the group on the module activities. This will allow individual participants to reflect on their own involvement and progress.

3) **Teaching Evaluation:** This allows the participants to evaluate and critique the design and teaching presence in the online learning environment, as also the processes of community of practice. The aspects of teaching presence include macro level instructional design and organisation, facilitation of discourse, and direct instruction (Garrison and Anderson 2003). In place of ‘teacher presence’, the authors have used ‘teaching presence’ to include even students as online moderators. Critiquing by the participants may focus on identification of ideas and concepts, conceptual ordering, organisation of learning activities, diagnosis of misconceptions, and guiding discourse.

4) **Satisfaction:** This is essentially the summative evaluation of the CPD programme at the reaction level. Learner satisfaction significantly influences the way they perceive the learning tasks and the process of reflective and transformative learning as worthy and productive. This space provides for ascertaining through questionnaire and other approaches the extent of individual participant’s satisfaction as also what needs to be done to involve them in the process. It may be noted that learner satisfaction must be a well-informed reaction from the participants.

5) **Process Reflection:** It is important that both the mentor and the participants themselves reflect on the process of reflective online collaboration. While this is a process which the mentor needs to encourage and ensure at various stages of the asynchronous discussion/conferencing, at this stage, the mentor can provide the participants
analysis of reflective discussions for further individual reflection. The computer program COPE or Discussion Explorer (http://www.scolari.co.uk) described by Salmon (2000) for analyzing reflections in online conference would be extremely useful for this, so also the critical incident reporting described by Galbraith (1992). This in a way is reflection on reflections, which could refer to Schon’s (1987) reflection-on-action.

6) Learning Assessment: The use of the online resource framework for CPD shall be highly effective, if the users of the system can also know for themselves the extent of their learning through online systems that can assess participants’ learning. This may have mentor intervention to provide specific inputs related to reflective learning and transformation. Every participant should be able to take unit-end or term-end exercises online and their performances may be available for comparison with that of the group. Macdonald (2004) identified use of three different incremental approaches to assessment of online learners (viz. assessment to create e-learning opportunities at critical points, assessment to support the development of e-learner, and assessment in which e-learners participate) depending on their levels of comfort with the online environment. She emphasized that the online assessment should be designed to encourage participation.

Formative evaluation
The frameworks of Online CPD (Panda and Juwah 2006) as also the ‘Online Resources’ based on review were subjected to anonymous peer review by experts teacher educators. Eight experts responded/provided their comments on online resources under three heads – the framework, design of online resources, and the media mix – which are collated and presented as follows:

The framework
The online resources framework for online CPD included the role of reflection in online constructivist professional development in which community of professional practice, culture, and online learning community play important roles. These, collaboratively, contribute to bringing reflection to the fore for individual and group construction and negotiation of meaning. Therefore, reflection needs to be facilitated to further enhance learning towards meaning making, transformative learning and development of professional identity. It was suggested by the reviewers that the role of reflection should be categorically linked across online learning community and community of practice, as also across internal construction and negotiation, and social construction and negotiation. Further, the situatedness of the context needs to be established and linked to individual cognitive structure, community of practice, and the role of culture in online learning community.

Design of online resources
The review of resources design presented in this paper included largely the design for online learning community, but also linked to individual activities and reflection, as also activities to be undertaken offline by the community of practice. It was suggested that the design was appreciated in the sense that it combined individual learning, learning in online learning community, and collaborative group work in the community of professional practice very well. However, the activities further needed to be linked, with the help of concrete examples, to each other and to establish
the respective reflective practice as well as their combined effect on development of professional identity and therefore professional practice.

**Media mix**

It was pointed out at the stage of needs analysis (Panda 2004b) that it would be more effective and efficient if content is provided as multiple media on CD-ROM, DVD and web based. Also, both mentor support and peer interaction should be provided online for ease of access and convenience. This is also supported by a recent study on online learners of information technology (Dikshit et al. 2003). It is important to note that mentor and peer support are of equal value and importance both online and offline for CPD within the CoP.

**Conclusion**

Developments in the web technology including the semantic web and Web 2.0 today provide educators and teachers enormous possibilities for individual engagement and group collaboration. Availability of open education resources under common licensing makes provision for access to free content unimaginable a few years ago. Differences in cultural, linguistic and individual learning style suggest that learning development resources need to be effectively designed to promote reflection and reflective practice. The resources, processes and activities in both the contexts of individual and collaborative reflection as well as at online learning community and offline community of practice need to be converged to establish smooth horizontal and vertical mobility in learning and professional practice. The consideration of the process is, therefore, of greater importance. Transformational learning and/or perspective transformation being the end goal of professional development, process design is the centre of such exercises. A recent work (Gunawardena et al 2006) on development of online wisdom communities (WisCom) based on two cycles—cycle of inquiry for module design, and spiral of inquiry for programme design—which foster development, innovation and support may form the reference point to work towards designing such processes especially in contexts of ill-structured knowledge domains. A point of crucial reference is the design of learning activities within online resources which can foster and promote reflection and reflective practice. Reflection has been considered as “individual reflective restructuring in thinking” (Gunawardena et al. 2006 p.223) at the fourth stage of the process before one reaches the final stage of negotiation/preservation. A core frame of pedagogical analysis within which reflection in online professional development can be located may be the ‘technological pedagogical content knowledge (TPCK) of Koehler and Mishra (2008). The TPCK goes beyond the individual knowledge of the components of content, pedagogy and technology; rather they are weaved together, and the “solutions lie in the ability of a teacher to flexibly navigate the space defined by the three elements … and the complex interactions among these elements in specific contexts” (Koehler and Mishra 2008 p. 18). Therefore, what the teachers and online facilitators require is cognitive flexibility for establishing relationships and understanding context-specific solutions. Online learning and online resources encompasses all the three – content, pedagogy, and technology – as also the teachers and students as human beings. These resources designed reflectively could lead to their effective contribution individually as well as collectively to enhancing professional practice. Further research is needed in-context to establish the effectiveness of the reflective online resources designed using the five tools discussed in this paper.
REFERENCES


Reflective Online Resources for Online Professional Development


