# DEVELOPING AN ICT PROFESSIONAL DEVELOPMENT MODEL FOR IRANIAN FACULTY MEMBERS

BY

SHEIDA JAHANI

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## DEDICATION

I would like to dedicate this work to my wonderful son, Kian Mehr, for his understanding, patience and unconditional love.

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**Pembangunan Model Perkembangan Profesional ICT dalam kalangan Ahli Fakulti Iran**

## ABSTRAK

Ahli fakulti kini menghadapi tekanan untuk memperolehi kemahiran yang bersesuaian untuk menggunakan teknologi pengkomputeran dalam pengajaran dan pembelajaran, penyelidikan dan penyediaan perkhidmatan. Berdasarkan faktor ini, ICT dianggap sebagai faktor penting dalam pembangunan dan penambahbaikan pengajian tinggi di Iran. Namun, terdapat beberapa perkara lain yang memerlukan ahli fakulti Iran menyediakan diri bagi menghadapi cabaran teknologi baru terutamanya dalam aplikasi ICT di tempat kerja, beberapa kekurangan dalam polisi tentang ICT di peringkat pengajian tinggi, pembiayaan yang terhad, kebimbangan dalam penggunaan ICT, halangan dari segi kebudayaan, cabaran kewangan, tiada kesinambungan dalam penggunaan ICT, dan kekurangan dari segi latihan dan program perkembangan profesional. Justeru, kajian ini akan membangunkan model perkembangan profesional ICT untuk ahli fakulti Iran yang berasaskan penilaian keperluan. Oleh itu, bagi mencapai objektif kajian ini, pendekatan kualitatif (*Sequential Exploratory Design*) dan kuantitatif yang melibatkan instrumen yang dibangunkan oleh pengkaji telah digunakan. Dua ratus lima puluh ahli fakulti telah mengambil bahagian dalam kajian ini. Manakala empat universiti komprehensif yang menjadi lokasi kajian adalah: Universiti Tehran, Universiti Shahid Behesti, Universiti Shahed dan Universiti Alzahra. Dapatan mengesahkan bahawa faktor utama model perkembangan profesional ICT seperti perkembangan individu, kolaborasi dan pelan pengajaran adalah penting. Di samping itu, dapatan menunjukkan pemberian insentif, isi kandungan pelan pengajaran, keperluan ahli fakulti dan keutamaan terhadap penggunaan ICT mempengaruhi pembangunan

model baru ini.  Ahli fakulti Iran juga telah menyatakan bahawa mereka perlu belajar tentang ICT secara khusus dalam membantu mereka dalam aspek pengajaran dan pembelajaran, penyelidikan dan penyediaan perkhidmatan melalui koloborasi dengan ahli fakulti lain.

**Developing an ICT Professional Development Model for Iranian Faculty Members**

## ABSTRACT

Faculty members are now experiencing pressure to acquire the necessary skills to make effective use of computer technology in teaching and learning, research and providing service. For this reason, ICT has been considered as the key element for the development and improvement of higher education in Iran. However, there are numerous challenges for universities to overcome in employing ICT; lack of a national ICT in higher education policy, inadequate investment, ICT phobia, cultural and financial obstacles, lack of continuity in ICT use, and finally lack of systematic training and professional development programmes. Therefore, this study attempts to address the issues of training and professional development by producing an ICT professional development model for Iranian faculty members, based on a needs assessment. To accomplish the objectives of this study a combination of qualitative (Sequential Exploratory Design) and quantitative research methodologies is utilised. Also a new instrument was constructed by the researcher for data collection and analysis. Two hundred and fifty faculty members have participated in this research. The four comprehensive universities, in Tehran, where the study was conducted were: Tehran University, Shahid Beheshti University, Shahed University and Alzahra University. The findings confirmed that the main factors of the ICT professional development model: personal development, collaboration and instructional plan, were crucial. In addition, the results indicated that incentives, content of the instructional plan, as well as ICT priorities were important to the success of the newly developed model. Finally, Iranian faculty

members indicated that they preferred to learn more about ICT as a specific tool in teaching and learning, research and providing service through collaboration with other faculty members.

# CHAPTER 1

# INTRODUCTION

## 1.0 Introduction

Nowadays, technology is continuously developing and becoming more important in the workplace and peoples' lives (Karsenti, Brodeur, Deaudelin, Larose & Tardif, 2002; Shapka & Ferrari, 2003; Teo, Lee & Chai, 2008). There is a worldwide perception for the need to use ICT in education as it provides easy access to global information and knowledge by the means of satellites and the internet (Ogiegbaen, et al., 2005).

ICT can also be used to promote collaborative learning, including role playing, group problem solving activities and articulated projects (Forcheri & Molfino, 2000). Generally, ICT is promoting modern approaches to working and learning, and new ways of interacting (Balacheff, 1993). The majority of faculty members recognise the benefits of ICT and are the main catalyst to promote the necessary changes (Whetston, 2001) to equip students with the skills they are expected to have upon graduation (Evans, 2004; Gunter, 2004).

ICT is considered the most extensive innovation to communication in the educational system (McCain & Jukes, 2001; Pelgurm, 2001; Pelgurm & Law, 2001), as it "will have, is having, has had, can have an impact on how we teach and learn" (Mehilnger & Powers, 2002. p.11). The omnipresence of the Internet supports learning and increases knowledge (Brown & Adler, 2008); enables anytime anywhere accessibility to extensive materials; fosters synchronous and asynchronous collaboration (Sife, Lwoga & Sanga, 2007); promotes online learning (Wray, 2007)

and student self-assessment (O'Brien, 2006); encourages reflective practices (Abrami & Barrett, 2005) and the shift from teacher-centred to learner-centred instruction (UNESCO, 2002). Such methods stand in sharp contrast to the traditional view of teaching and learning (Brown & Adler, 2008). Nevertheless, mastery in ICT is necessary to understand benefits from such an open and flexible teaching and learning environment (Kader, 2007; McCain & Jukes, 2001; Mehilnger & Powers, 2002). Accordingly, educators (Britten, Mullen & Stuve, 2003; Georgi & Crowe, 1998; McKinney, 1998; Montgomery, 2003) advocate integrating ICT in teaching practices to nurture teachers' development and growth. Nowadays, there is no longer a debate on whether ICT should be employed in teacher education programmes or not. The discussion now focuses on the scope ICT use. Even though, it is often challenging for instructors to consistently thrive and excel with the demands of changing technologies and expanding roles that require life-long learning through continuous re-skilling or up-skilling of competencies (Stefani, Mason & Pegler, 2007).

In higher education systems there has been a recent and significant shift in training policies (Edwards & Bruce, 2004; Edwards, 2007; Kemp, 1999; Martin & Rader, 2002). ICT learning opportunities and utilisation are some of the key educational issues across the globe and for a number of years there has been evidence of changes in training and development (Edwards et al., 2006). It is essential that the training in ICT becomes the focus of staff development, but this needs to be achieved in a constructive manner in order for instructors to achieve the full benefits of using ICT in their daily tasks (McCarney, 2004).

## 1.1 Research Background

In this new world era, there is a shift from production-orientation to information-orientation. Universities are at the core of this explosion of information availability. Universities with their commitment to the production, transmission and preservation of knowledge need to be ready to participate in this change in human interaction (Hyatt, 2003).

According to Meerts (2003) technology is now an essential infrastructure, like electricity, and no enterprise or organisation can exist without it. Today ICT is a productive instrument in higher education, and the acquisition of specific ICT literacy knowledge and skills by university professors needs to be the focus of attention.

However, research on this theme shows that some institutions are failing to integrate technology into existent environments. Bauer and Kenton (2005) determined in their study that although faculty members had adequate skills and were innovative, they did not integrate technology regularly or easily, either as a teaching or learning tool. Reynolds, Treharne and Tripp (2003) additionally identified ongoing issues with teaching staff and their acceptance and utilisation of ICT and suggested the need for more research on how ICT can improve education.

McKnight's (1995) study, "Managing Technology Change in Universities" found that universities are facing with increasing costs, declining incomes, changing populations and ecologies and increasing competition. Technology may be a solution for some or all of these problems.

Lareki, Morentin and Amenabar, (2010) carried out research during the 2007–2008 academic year at the University of the Basque, attempting to identify criteria that would allow the development of more efficient training methods on ICT

for faculty members by analysing existing training needs and preferences. They found that established systems to understand training needs received input from about 47% of the faculty, (participation was voluntary), which suggested that faculty were interested in providing information about their training needs.

Oliver (2000) in his study on the role of ICT in higher education for the 21st century explained that contemporary learning settings now encourage students to take responsibility for their own learning, through technology-facilitated approaches, which is in contrast with the current Iranian students' content-centred curricula.

Ensafi (2007) found from a study in Ferdosi University, one of the largest universities in Iran, that both students and faculty members were not familiar with new ways of communication. More than 70% of students preferred to ask their lecturers questions orally, rather than use e-mail. The researchers believed that only younger professors, who completed their PhDs in the past few years, accepted ICT and took its benefits seriously. Furthermore, 30% of students agreed that ignorance was a core reason that ICT was less integrated in the university and the national educational system overall. The majority of faculty members did not use ICT in their work, though adequate computer infrastructure was available in most major universities in Iran. Part of the reason for this may be due to the fact that 60 % of students believed that some tutors did not have enough time to update their skills, experiment with and exploit opportunities provided by ICT, specifically in the area of virtual classes.

Research has found that ICT makes lessons more interesting, more enjoyable, and may enhance career prospects (Cox et al., 1999). Most faculty members want to learn to use educational technology effectively, but they lack the understanding, time, computer access, and support necessary to do so. For pedagogical outcomes to

improve through the implementation of ICT, faculty members need the support of a well planned, professional development programme. Such a programme can take various forms, but is most effective when based on a proven theoretical model and tied to curricular objectives, an evaluation process, and supported by incentives and staff motivation.

When designing or implementing any higher education professional development model for technology, it is important to situate that programme within the context of a theoretical framework for adult learning. Experience from around the world in developing, industrialised, and information-based countries have shown that teacher training in the use and application of technology is the key determining factor for improved student performance (in terms of both knowledge acquisition and skills development enabled by technology). Educational technology is not, and never will be, transformative on its own as it requires users who can integrate technology into the curriculum and use it to improve student learning (Haddad & Draxler, 2002). ICT in classrooms should be more widespread, and faculty members should be supported both technically and educationally and the process should be institutionalised via the framework of the policies and strategies of universities (Usluel et al., 2008).

Educational institutions must now set up opportunities where faculty members can access and use ICT effectively. The imperatives of the age of knowledge and information and the need to follow the achievements of information technology have led to government decisions to invest in the rapid expansion of information and communication technology. It is understood that ICT can demonstrate a dramatic impact on achieving specific social and economic development goals as well as play a key role in broader national development strategies.

The results of a number of empirical studies in Iran showed the achievements related to the use of ICT in education (Montazer, 2004; Koush & Abdoli, 2007; Fathivajargah & Azadmanesh, 2007; Ensafi, 2007). As well, it is timely that the Iran's National ICT Plans, the Development of Human Resources and Education Programme, have been developed to support and enhance the educational processes in schools, universities and governmental organisations. The National ICT Agency (NICTA), called "TAKFA" in Persian, was established and is responsible for supervising and managing ICT. One of the priorities for NICTA in the 2002-2003 plan was to promote ICT applications in education (schools and universities) and expand ICT skills across all levels of Iran's population including state organisations, higher education, health treatment and medical education (Kousha & Abdoli, 2004). Building up the necessary infrastructure for scientific centres and applying ICT towards expanding the academic and research activities in universities are top priorities for the Ministry of Science, Research and Technology (MSRT) in Iran.

The Iranian management and planning organisation launched the ICT application development plan (TAKFA), to support the objectives (Karimian & Husseini, 2004). The TAKFA plan defined a new mission for MSRT; to increase the training capacity for human resource development in ICT, to equip universities and research centres with the adequate software and hardware to ensure reasonable access for students and implement virtual learning in higher education through ICT integration within MSRT management systems (Karimian & Husseini, 2004). According to the outlook for the Islamic republic of Iran over the next two decades, Iran plans to be a knowledge-based society. This plan necessitates the improvement of ICT literacy in the general population, but also specifically among Iranian faculty members as a source of change in higher education. Successful ICT training

programmes should offer the latest training methods on ICT for university faculty members based on the analysis of ICT training needs and preferences (Lareki et al., 2011). This study proposes to develop an ICT professional development model based on Iranian faculty members ICT needs and priorities, in teaching, learning, research and providing services.

## 1.2 Problem Statement

In recent years, the focus of ICT in education has changed. It has moved from learning about ICT, to learning through ICT. Educational institutions must now provide opportunities for academicians to access and use ICT in real and meaningful teaching situations.

It is believed that academicians' needs, experiences, priorities, opportunities and attitudes have an immense influence on the implementation of ICT in their educational practice. Berge and Mrozowski (1999) recommended that educator training programmes should research educator needs so that they could gain insight into how ICT could enhance their educational practice; this requires an ICT literacy assessment of faculty members. Geisert and Futrell (1990) believed that the experience of computer literate educators, affect the way they perceive the impact of the introduction of ICT on their educational practice.

In fact, faculty member staff development is one of element to achieving an efficient and flexible work force in universities. Iran, as a developing country, is in need of faculty members who will promote optimum learning opportunities in higher education settings. For this reason ICT literacy of academicians in Iran has been researched in recent years, and budgets allocated to ICT development have been increased in different ways. However, investment in the technological infrastructure is only the first step towards the achievement of ICT literacy in higher education

institutes. Technology is futile without humans behind it, academicians must embrace technology and realise its true potential, before the next steps can be taken. Therefore, assessing ICT literacy levels of faculty members and providing proper training is the key to this development.

The higher educational system of Iran is centralised and all training and development decisions for faculty members are conducted at the central level. Among different training and development programmes, which have been mandated for in-service education of faculty members, only one programme is about ICT. The programme is the ICDL (International Computer Driving Licence) and is common for all universities' academic and non-faculty members. Regardless of their backgrounds in ICT and assigned tasks in different universities, all staff are required to undertake this common training programme. Furthermore, according to the MSRT (2008) the ICT workshops were conducted by MSRHE from 2003 until 2007 for faculty members, and approximately 10% of the total number of faculty members participated in the ICT workshops. It seems there is a big discrepancy between current situation as the official report states and an ideal situation in which all academics are equipped with the required ICT competencies.

A government act about higher education curriculum development in 2000 has brought change to every major public university, as they have been given more authority on curriculum and training decision making. Under such circumstances, despite the great importance of ICT literacy training in promoting internationalisation of campuses and carrying out of the distinct duties of university faculty members in various domains including teaching, research and providing service, there are no specific programmes for skills training in Iranian universities.

The main purpose of this study is to assess the ICT literacy level of faculty members of Iranian public universities, and use the obtained data, regarding ICT needs, to develop an effective and suitable ICT professional development model for Iranian faculty members. This model will therefore be relevant to faculty members' backgrounds, individual and organisational needs. In the other words, this study aims to develop an ICT professional development model based on the ICT needs assessment of faculty members in Iranian universities regarding their current abilities pertaining to ICT use in teaching and learning, research and providing service.

## 1.3 Main Objectives

The main objectives of this research are accomplished using a combination of qualitative and quantitative methods.

1. To assess the current ICT literacy level of faculty members in Iranian universities.
2. To explore the required ICT competencies of Iranian faculty members based on needs assessment.
3. To identify the ICT needs priorities for Iranian faculty members based on the needs assessment.
4. To propose a professional development model for Iranian faculty members based on the needs assessment.

## 1.4 Research Questions

Consequently, a number of specific research questions and issues emerged, and the main research questions are summarised below:

**1**: What is the current ICT literacy level of faculty members in Iranian universities in teaching and learning, research and providing service in terms of faculty, department, gender and academic experience?

**2:** What are the required ICT competencies of faculty members in public Iranian universities; skills, concepts, and intellectual capabilities - of faculty members, in terms of faculty, department, gender and academic experience?

**3:** What are the priorities for ICT needs in the academic functions teaching and learning, research and providing service of faculty members in terms of faculty, department, gender and academic experience?

**4:** What are priorities for the required ICT competencies—skills, concepts, intellectual capabilities - of faculty members, in terms of faculty department, gender and academic experience?

**5:** What are the main characteristics of an ICT professional development model, for faculty members in Iranian public universities, based on the ICT literacy assessment?

## 1.5 Limitations of the Study

There are several possible limitations of this study. The most important are:

- This study focused on public universities while private higher education institutions were not examined.

- Also the study was conducted in Tehran, the capital territory of the country, and consequently, may not provide a comprehensive generalisation of Iranian faculty members' needs.
- Furthermore, the study focused on faculty members while other stakeholders like administration staff, support staff and students were not examined.

## 1.6 Rationale of the Study

Development of information literacy requires that all faculty members in the university be aware of what should be done and who should do it. It is important that faculty members accept their role in promoting students' information literacy. Staff members of universities are central to the successful use of ICT in teaching and learning.. If they do not use electronic resources in their teaching, then their students tend to ignore them too. Consequently, students' ICT knowledge and skills are significantly affected.

Faculty member's readiness and comfort level with technology needs to be built up to keep pace with changes in teaching and learning approaches.

From Partnership for 21st Century Skills (2003), there was an urgent need for higher education to focus on ICT proficiency. There is a growing awareness that the traditional education system will become irrelevant, unless the gap between how students use technology in their daily lives and their exposure in the classroom is bridged.

Today, ICT is a productive instrument in higher education. Iranian academic members of higher education institutions are asked to utilise ICT in educational settings and to use different features of this new technology in teaching and learning

as well as research activities. Although, academicians feel increased pressure to use ICT, they commonly face several obstacles when attempting to use technological teaching techniques, such as a lack of national policy for using ICT in higher education, a lack of adequate investment, ICT phobia, a lack of continuous and systematic training and development programmes, internationalisation of higher education, the industrial situation, financial challenges and cultural obstacles (Jahani & Mohamed Ismail, 2009).

Institutions of higher education must develop strategic ICT integration plans that help overcome the existing barriers that make technology use frustrating for the technologically perceptive, and they must deal with the many teachers who may be somewhat techno-phobic (Whitaker & Coste, 2002). There is a requirement for universities to design and develop ongoing ICT training that meets the disparate needs of faculty members, regardless of their current level of ICT literacy. ICT application training in higher education is, in fact, a strategic action, equipping academicians as well as students with knowledge and skills that will see them through their educational career and beyond (Trkman & Baloh, 2003).

In Iran, the educational authorities and faculty members have to implement programmes based on regulations and a specific timetable but they do not have permission to change and modify these. In this situation, in practice, the dominant system of education presents the programmes and in-service training is provided for staff without considering local and situational realities.

The result of this method is a lack of attention to the educational needs of academics and students as well as social problems and scientific development. The vast range of educational and professional criticism against following such systems and also the negative consequences of centralised decision making is the main reason

to have a revision of educational planning, especially in the higher education sector. It also opens the opportunity to grant some form of authority to higher education institutions regarding decision making for matters related to teaching and learning, research planning and management as well as building strong relationships with community organisations for funding purposes and moving towards autonomous educational organisations (Fathi vajargah, 2007).

This important issue was at the centre of concerns in the recent decade during which, the country experienced some mild political and economic changes and macro-policy making aimed at more civic participation of the nation in all spheres.

An ICT needs assessment frames the problems or opportunities of interest for faculty members who have a stake in the issue. It also provides the foundation for planning and action to improve learning, training, and performance. More specifically, a needs assessment can align resources with strategy, clarify problems or opportunities, set goals for future action, and provide data for decision making. Needs assessment can also identify leverage points and resources for making changes, establish objectives for initiatives, prioritise actions, determine who must be involved for the human resource development or performance efforts to be successful, and provide baseline data for later evaluation of results (Gupta, 2007).

## 1.7 Significance of Study

The introduction of ICT to education has brought changes in the way academicians teach, do their administrative work, communicate and conduct research (Ho & Leong, 2003). The power and flexibility of ICT as an educational tool can create specific environments that cater for the needs of educators in their educational practice, because it can be used to produce models of complex situations or processes (Brownell, 1992).

Literature on ICT literacy encourages universities to support academicians and to make computer technology available for them to use, learn about and equip them for effective utilisation of ICT in their teaching environment. Consequently, the most important benefits of assessing ICT literacy of faculty members in Iranian public universities are to:

Provide a basic set of ICT competencies that establish meaningful faculty member development programmes in order to integrate ICT into academic teaching and learning, and Advance student learning, and to improve other professional duties.

Additionally, assessing ICT literacy of Iranian faculty members and planning the professional development for them will improve their performance in teaching and learning activities. In other words, ICT can be considered as a "multidimensional tool." It provides ICT applications that support and supplement instruction in university. The use of ICT can revolutionise teaching and learning and could bring advances that would improve higher education dramatically.

In addition, ICT literacy will help the faculty members in Iranian public universities manage the numerous routine management tasks they face in university with teaching and learning, research and providing service. Recently, the introduction paperless systems in higher education administration in Iran and a Management Information System (MIS) required faculty members to use ICT in administrative affairs.

Also ICT competencies of faculty members in Iranian higher education institutions will improve the quality of higher education, which is one of the most important concerns of university managers in the country after the era of quantitative development in the past ten years.

Universities in developing countries, like those in developed countries, want to provide quality education that will inculcate lifelong learning. The standards and performance indicators for faculty members, demand that all faculty members should be prepared to demonstrate growth in knowledge to provide quality education.

In short, it is necessary that faculty members in Iran equip themselves with ICT competency to meet the challenges of the information age. Such challenges can be met if their level of ICT literacy can be assessed, and deficiencies and needs can be included in faculty members' development programmes.

The Iranian government is investing large sums of money to promote faculty members' ICT literacy. However, the impact of these investments such as ICDL and ICT workshops, presented by MSRT, must be evaluated to ensure that the intended results are achieved. Information and Communication Technology literacy of academicians should be measured and a suitable ICT professional development model needs to be developed.

## 2.19 Theoretical Frameworks

A study is compelled to be preceded and guided by a proper theoretical framework for inquiry because a theory might be a prediction or interpretation of a set of related constructs, determinations and propositions that demonstrates a systematic view of phenomena by indicating relations between variables, with the rationale of explaining ordinary phenomena.

The efficient view might be a rationale, a discussion, or a reason, and it supports to explain or predict phenomena that occur in the world (Gottschalk & Seather, 2009). Additionally, theory is an accumulation of assertions, both unwritten and symbolic, that detects what variables are significant and for what justifications and that particularises how they are interconnected and why. It specifies the

circumstances under which variables must be related or not related (Gottschalk & Seather, 2009). Other authorities have clarified the theory in terms of narratives and statement (Colquitt & Zapata-Phelan, 2007).

Theory enables analysts to realise and predict results on a probabilistic basis (Colquitt & Zapata-Phelan, 2007). Theory allows analysts to describe and illustrate a procedure or complex sequence of events. Theory avoids analysts from being disordered by the complexity of the real world by providing a verbal tool for organising a meaningful understanding of the real world. Theory shows as an educational tool that produces perceptions into inter-organisational phenomena such as obtaining of organisational purposes. However, in this study, several learning theories such as social constructivism theory, adult learning theory were developed in the literature to facilitate understanding of the process by which new technologies can used properly in the ICT professional development model.

### 2.19.1 Social Constructivism Theory

Constructivism has a strong history. Plenty of theorists have contributed to its development over the last century (e.g. Jean Piaget, Lev Vygotsky, Jerome Bruner, Ernst Von Glaserfeld), and some brands are accepted in this area (cognitive constructivism, social constructivism, radical constructivism). Vygotsky (1978) developed the theory of social constructivism, which stated that learning, or cognitive development, is accomplished through interactions between people, especially other learners and teachers (Maddux, Johnson & Willis, 1997).

Much of the collaborative problem solving plan is constructed on the best of Vygotsky's theories, perception the zone of proximal development (ZPD). Social constructivism, strongly modified by Vygotsky's (1978) effort, suggested that knowledge is initially constructed in a social context of collaborative elaboration

(Bruning et al., 1999; Cole, 1991; Eggan & Kauchak, 2004), where individuals share individual points of view (van Meter & Stevens, 2000) and learners construct understanding together, whereas it is impossible to construct understanding alone (Greeno et al., 1996). Other constructivist authorities agree that people develop meanings and context by interacting with other people and their environment. People create knowledge from social, cultural and environmental interactions (Ernest, 1991; Prawat & Floden, 1994).

Duffy and Jonassen (1992) have suggested that tasks and problems are often best solved by learners, with a variety skills and experience, collaborating and sharing. People maximise their development potential by the constant challenge of mastering tasks and skills that are just beyond their current level of knowledge. This builds on their motivation and confidence from previous accomplishments (Brownstein, 2001). Vygotsky (1978) had similar line of thought with his ZPD, defined as the gap between an individual's current level of development and their level of potential development. The gap, or zone, is measured through problem activities.

Adult learners need to see that the professional development learning and their day-to-day activities are related and relevant. Adult learners need direct, concrete experiences in which they apply the learning in real work. Adults need to receive feedback on how they are doing and the results of their efforts. Opportunities must be built into professional development activities that allow the learner to practice the learning and receive structured, helpful feedback.

Adults need to participate in small-group activities during the learning to move them beyond understanding to application, analysis, synthesis, and evaluation.

Small-group activities provide an opportunity to share, reflect, and generalise their learning experiences.

Adult learners come to learning with a wide range of previous experiences, knowledge, self-direction, interests and competencies. This diversity must be accommodated in the professional development planning.

Adult learning is not automatic and must be facilitated. Coaching and other kinds of follow-up support are needed to help adult learners transfer learning into daily practice so that it is sustained.

Lieb (1999) determined that adults' learning process is often ongoing over their lifetime. When faced with new experiences or learning situations, adults are often anxious or nervous. To overcome anxiety and other issues, such as work-related responsibilities, adults need more motivation and incentives to learn. Subsequently, faculty members need to be given positive reinforcement at the proper time (Huang, 2002).

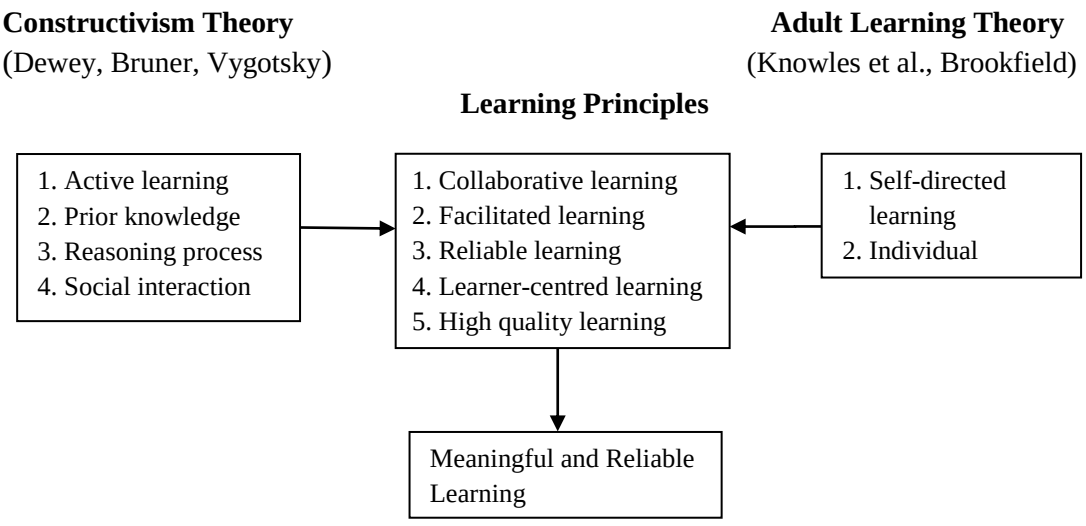


*Figure 2.11* Theoretical Framework

### 2.19.2 Conceptual Framework

According to the constructivism theory each training program has to be based on the learner's needs and priorities. Therefore, based on the constructivism theory, each learner has their own unique background experiences. Also, based on adult learning theory, adult learners need direct concrete experiences in which they can apply the learning in real life situations. For this reason, in this study, the professional development model is based on the "needs assessment" in order to assess the ICT needs and ICT priorities of faculty members in teaching, learning, research and providing service. Also, according to Vygotsky the seemingly impossible solo learning becomes possible when individuals share their points of view and construct the understanding together. Adults need to participate in small-group activities during the learning in order to go beyond understanding to application, analysis, synthesis and evaluation. Therefore the professional development model, designed in this study, includes collaboration as the main factor. On the other hand, the ICT needs assessment indicates that the goals, contents and methods of teaching and learning as well as the methods of evaluating the learners, which appears in the professional development model under organisational plan factor as a one main factor of the new developed model which adult learning theory model also as express adult learners are self direct and they indicate their own needs.

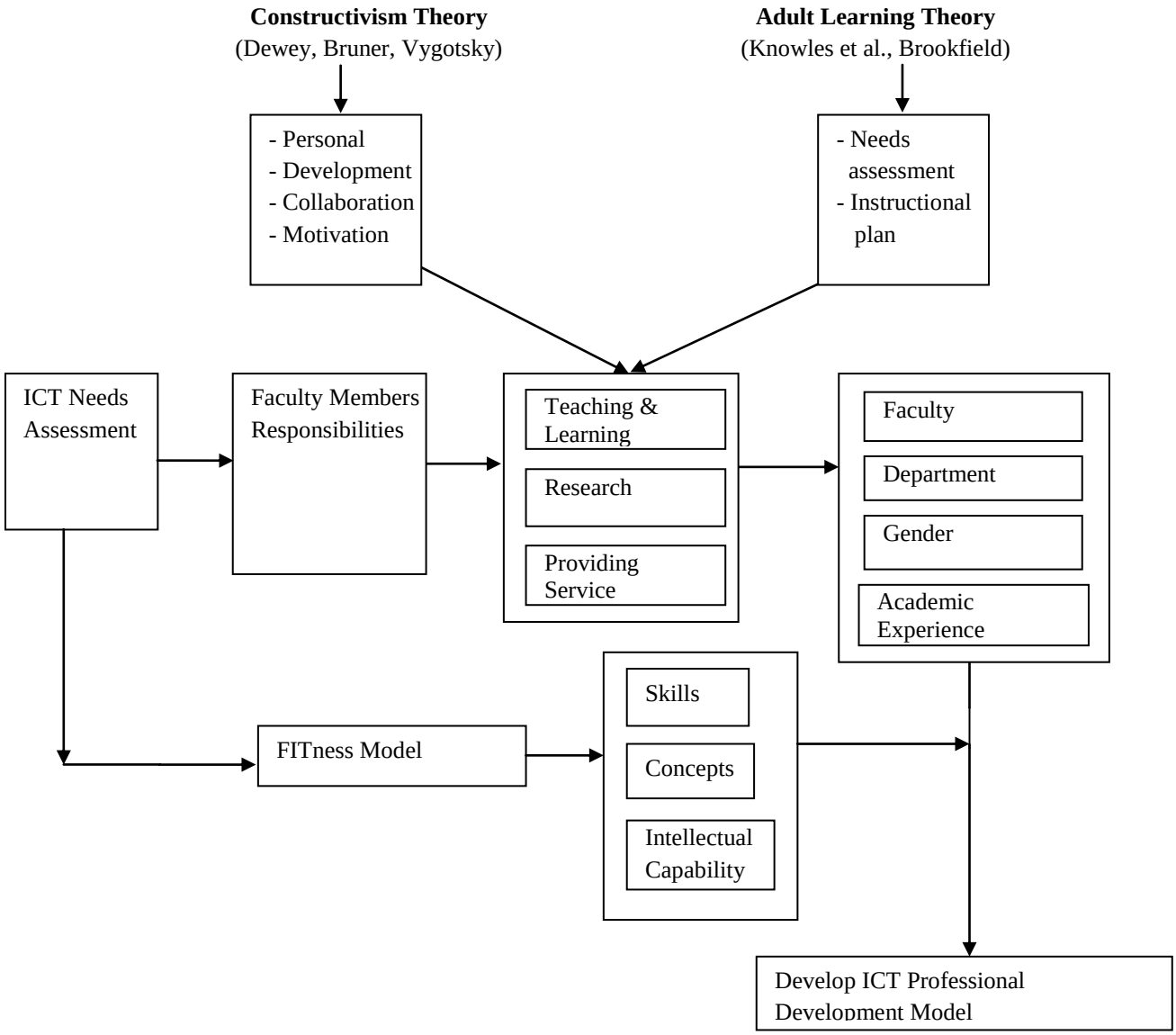


*Figure 2.12* Conceptual Framework

## 1.8 Conceptual Definition of Terms

**ICT Literacy:** ICT literacy is using digital technology, communication tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society (O'Connor, 2002).

**Skills**: Knowledge and actions that faculty members' proficiently apply in appropriate situations, in order to perform their job.