

# Well-designed communities of practice (CoPs) in the ODeL environment: students' perspectives<sup>1</sup>

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## ABSTRACT

*Forming communities of practice is an important approach for knowledge sharing and well-designed communities of practice may provide mechanisms for innovation in Open, Distance and eLearning environments. However, the specific guidance to establish communities of practice in higher educational institutions does not always exist. The question further remains how willing are the students to share knowledge within communities of practice at institutions of higher education in order to empower learning and knowledge sharing within those institutions. The aim of this article is to explore the attitudes of 502 students at an open distance e-learning higher education institution or university towards communities of practice. The study applied a quantitative approach using a questionnaire and descriptive and inferential statistics to analyse the responses. The students were invited to engage in learning activities within communities of practice. They were free to decline to participate in this research study, and could withdraw their participation from the study at any time. Returning the completed questionnaire to the researchers indicated their willingness to participate. They preferred online forms of communications. The findings can be used to analyse relationships among communities of practice knowledge-sharing enablers and students' willingness to engage in communities of practice processes. This study described several implications essential to successful learning and knowledge sharing through communities of practice.*

## INTRODUCTION

Increasing numbers of ill-prepared students with inadequate study skills are entering open and distance e-learning (ODeL) environments and performing their study tasks in socially isolated contexts. ODeL in general involves the use of online tools and infrastructure that are currently not well-designed to satisfy the needs of students with varying learning skills and experiences (Maor, 2003; Fozdar & Kumar, 2007; Ruey, 2010; Pitsoe & Maila, 2011).

Although students are at the centre of an outcomes-based learning system, it is debatable whether students' needs have adequately been premeditated in this current ODeL learning system. One way to address students' needs is to form communities of practice (CoPs) in higher education. CoPs can be described as groups of like-minded, interacting students who analyse, build, create and share knowledge in their domain (Burk, 2005) through a practice, an identity and a joint enterprise (Wenger, 2000; Nickols, 2003).

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To examine CoPs in higher education, a study has been initiated as part of a Women in Research (WiR) longitudinal action research project that consists of six phases: developing a theoretical framework and explicit criteria for well-designed CoPs; exploring students' preliminary attitudes towards CoPs; forming pilot CoPs; evaluating pilot CoPs groups; implementing action research to pilot CoPs; and applying a CoP model (CoPM) to other groups. The aim of this article is to highlight phase two of the study namely exploring students' preliminary attitudes towards CoPs in an ODeL higher education in South Africa.

The quality of ODeL education is important to its stakeholders and well-designed CoPs can invite students and even evoke innovative activities. Moreover, the researchers of this study are of the opinion that the current learning management system at an ODeL institution or university has both advantages and disadvantages for forming CoPs because most collaboration is text-based. However, the researchers believe that most mainstream learning challenges and desired practices at an ODeL institution neglect the new trends in learning and knowledge sharing through social communication means such as communities of practice (CoPs). Furthermore, Baran (2006), Gannon-Leary & Fontainha (2007) and Wubbels (2007) advocate more research about CoPs. In a similar vein Petersen (2007) cited by Gannon-Leary and Fontainha (2007) holds that the concepts of learning in CoPs need to be further investigated.

The researchers investigated students' insights on how to invite the sustained interaction that could contribute to the enrichment of their body of knowledge, and widen a peer network and decision-making skills. The study examined how, in the ODeL education setting, existing practices and online systems influence the scope of situated learning that is crucial for CoPs.

The learning management system of this ODeL institution aims to assist students to communicate with their lecturers, with other students about their studies and with the administrative departments of this institution and participate in online activities. Via the online learning management system, registered students are able to submit assignments, gain access to the library functions and various learning resources and download study material. They can participate in online discussions of relevance to their module. Furthermore, the learning management system consists of the following options: announcements, official study material, sign up function (e.g. for a study school session), blogs and self-assessment surveys to mention just a few.

There are varieties of technologies used through the online learning management system in addition to multimedia, video and audio conferencing, telephone, SMSs and MMSs via cell phones, discussion forums or chat facilities to support ODeL (Ferreira & Venter, 2011). However, '...the throughput rate of students is still unsatisfactory' (Ferreira & Venter, 2011: 86), and the institution's '...ODeL should consider designing teaching and learning activities within a reflexive inquiry framework...' (Coombs, 2000 cited by Pitsoe & Maila, 2011: 485).

The main purpose of this article is to determine the students' opinions, perceptions and readiness for engagement within CoPs in order to empower learning and knowledge sharing within the ODeL institution. Furthermore, the purpose is to set a framework for forming CoPs as the next phase of the WiR project using networked technologies as remote social collaboration tools and World Wide Web (WWW) communication means.

Based on the preceding, the specific objectives of this article are to:

1. identify students' willingness and perceived benefits with regard to CoP
2. discuss team preparedness and collaborative technologies that can positively influence CoP learning teams
3. identify and discuss key communication modes which can support CoP learning environments.

To achieve the objectives, the following research questions are set:

1. What are the opinions of students in terms of their willingness to share knowledge and experiences?
2. What perceived benefits of CoPs exist among students at the ODeL institution?
3. What are the opinions of students in terms of team preparedness and collaborative technologies that can positively influence CoP learning teams?
4. What communication modes are appropriate for CoP learning environments?

In order to achieve a methodological triangulation and improve validity and reliability of results the researchers proposed to test and prove the following null hypotheses:

H-01: There is no difference in terms of students' willingness to engage in communities of practice within School of Computing and School of Management Sciences.

H-02: There is no difference between perceived benefits of communities of practice among students in School of Computing and School of Management Sciences.

## THEORETICAL FRAMEWORK FOR COPS IN ODEL ENVIRONMENTS

The theoretical framework will discuss the concepts of CoPs and ODeL, the barriers to learning in ODeL environments and knowledge sharing within online CoPs and finally, the appropriateness of current technology for ODeL CoPs.

### *Defining communities of practice*

CoPs have been described as 'groups of people informally bound together by shared expertise and passion for a joint enterprise' (Wenger & Snyder, 2000: 139) with similar task responsibilities that solve authentic problems and promote interdisciplinary knowledge and practice across different groups (Wick, 2000 cited by Johnson, 2001). This definition agrees with that of Barab, Makinster & Scheckler (2003: 238). They view a CoP as a 'persistent, sustained social network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history, and experience focused on a common practice and/or mutual enterprise'.

Wenger and Snyder (2000) identify three structural elements of CoPs: domain, community, and practice. The domain represents common ground where participants share their ideas and knowledge (Gunawardena, Hermans, Sanchez, Richmond, Bohley & Tuttle, 2009). The community is a group of people who learn and interact together, building relationships that result in a feeling of belonging and a mutual commitment (Wenger, 1998a, b). The practice is the specific knowledge the community develops, shares, and maintains (Wenger, McDermott, & Snyder, 2002).

Wenger & Snyder (2000) articulate some CoPs dimensions: enterprise (level of learning energy); mutuality (the depth of social capital); and repertoire (the degree of self-awareness) while Hildreth, Kimble & Wright, (2000: 35) point out that '...a community has a common set of interests, is self-generating, is self-selecting, and is not necessarily co-located'.

CoPs groups interact in virtual and off-line contexts. Virtual CoPs include facilitators and management support and 'they are all created for a specific purpose...' (Lewis & Allan, 2005). Although online environments make synchronous or asynchronous communication possible (Baran, 2006), developing online CoPs is more time-consuming than co-located CoPs (Lai, Pratt Anderson & Stigter, 2006). Computer-mediated communication occurs mainly in online CoPs but in co-located CoPs mainly face-to-face communication occurs.

### *Open, distance and eLearning paradigm*

Distance learning is a process whereby the student learns while separated from the tutor/teacher (Keegan, 1996; Evans, & Nation, 1989; Trentin, 2002). Open learning is any form of learning with strong emphasis on flexibility and learner centeredness (Rowntree, 1982). E-learning focuses on the intersection of education, teaching, and learning with ICT (Wasko & Faraj, 2000; Roberts, 2013).

The structure of an open and distance education paradigm gives students the greatest possible control over time, place and pace of learning (Taiwo, 2011; Moore & Thompson, 1990; Morgan, 1995; Siddiqui, 2008; Honeyman & Miller, 1993). However, ODeL should be blended, underpinned and guided by the principles of reflectivity and situated learning contributing to students' critical and reflective thinking (Pitsoe & Maila, 2011). Additionally, adequate levels of cognitive, social, and teaching presence place a premium on quality student-student interaction that allows for asynchronous reflection, sharing and discussion (Moore & Thompson, 1990; Dzakiria & Idrus, 2003).

Learning does not always occur smoothly in ODeL environments. Various barriers to learning exist, which will be discussed in the next section.

### *Barriers to learning in ODeL environments*

Recent research (Fozdar & Kumar, 2007; Ferreira & Venter, 2011; Nage-Sibande, van Vollenhoven & Hendrikz, 2011; Pitsoe & Maila, 2011) highlight multiple barriers in ODeL environments.

Ferreira & Venter (2011) specify that students at this ODeL institution prefer face-to-face contacts, more guidance from lecturers, tutorial letters emailed to them timeously and training in the use of Internet. Similarly, Fozdar & Kumar (2007) cited by Ferreira and Venter (2011: 89) stipulate the following barriers: a 'lack of personal contact and immediate feedback from lecturers on work done; sense of isolation; pre-course orientation to help with management of studies; tutor support; improved information and formative advice.'

Nage-Sibande et al. (2011) indicate barriers such as the use of technology (e.g. Web-CT and Blackboard) as well as other limitations: poor support services in Botswana higher education distance learning, a poor learning environment, institutional attitudes, stigma and a low opinion of distance learning in public, tutors' guidance missing, restrictive plans and limited resources (Nage-Sibande et. al., 2011).

While students required training in the use of Internet (Ferreira & Venter, 2011), Ruey (2010: 712) recorded a lack of students' technological skills as a hindrance to effective online learning. Maor (2003: 130) also noted that addressing technical problems in online learning was time-consuming that requires a heavy commitment from both lecturer and student. Mbatlali (2012) and Goos, Galbraith and Renshaw (2002) point out the importance of social presence and metacognition in distance learning such as the ability to socialise, the opportunity to create a social presence, and the motivation to engage on a social level.

### *Cultivating knowledge sharing and exchange within online communities of practice*

According to Lave & Wenger (1991) CoPs are 'effective loci' for the creation and sharing of knowledge and are able to retain dynamics and evolve knowledge within a real-time process. This is important as education in a higher education environment has become progressively marketised (Goodson, 2005), demanding innovative products and multiple intelligences (Gardner, 1993).

CoP members engage in shared experiences over time, and cultivate a commitment to shared understanding (Eckert, 2006) developing new products through peer interaction and expert-to-apprentice interaction

(Pan & Scarbrough, 1998). Pan & Scarbrough (1998 cited by Pan & Scarbrough, 2010) highlight three layers of interaction: infrastructure, infostructure and infoculture. CoPs interactions are based on situated learning that emphasises apprenticeship, coaching, collaboration, multiple practices and the articulation of learning skills, stories and technology (Brown, Collins & Duguid, 1989).

An instructor or a CoP group leader (a moderator, coach or mentor), acts as a gentle guide or facilitator, that includes the instructor's duty of opening the community environment for discussion of the following: (1) goals and criteria for meeting the goals, (2) evaluation of whether the goals have been met, and (3) peer evaluation and self-evaluation (Bielaczyc & Collins, 1999; Rogers, 2000).

Within CoPs knowledge development can be continuous, cyclical and fluid (Eckert, 2006) and knowledge sharing depends on individual characteristics, including experience, values, motivation, and beliefs (Hsiu-Fen, 2007). Student-student interaction is also critical for skill proficiency needed for collaborative or cooperative tasks (Anderson & Garrison, 1995; Sharratt & Usoro, 2003) contributing to knowledge sharing and exchange.

Sharing, collaborating and learning from one another are the central activities in a knowledge society. Knowing each other is an important aspect for success in online collaboration and knowledge transfer (Wilson, 1996; Fischer, 1998; Hammond, 2006; Borthick & Jones, 2000; Kehrwald, 2008; Zhang, Peng & Hung, 2009; Jakovljevic, Buckley & Bushney, 2013).

#### *Appropriateness of current technology for ODeL communities of practice*

Combining wikis with several other social networking applications (e.g. Facebook, MySpace, and LinkedIn) creates a powerful environment for communication and learning (Gunawardena et al., 2009). Web 2.0 tools foster interaction, collaboration, and contribution (Siemens, 2004). These tools allow synchronous and asynchronous communication, access to and from geographically isolated communities and international information sharing (Dela Pena-Bandalaria, 2007; Gannon-Leary & Fontainha, 2007).

In addition, Gunawardena et al. (2009) propose the use of 'Community Walk', a community mapping site, for creating informational, interactive, and engaging maps of the context and location of community members. 'The combination of content (i.e., text, images and animation), scaffolding (i.e., especially with respect to Web-based technology), plus text-based communication can be suitable environments for emerging communities of practice' (Johnson, 2001: 51-53).

This author points out that web-based audio and video conferencing are currently inadequate for group conversation on a regular basis (Johnson, 2001). With email communications and other text-based communications short and superficial messages cause frustration (Hammond, 2006).

Given the aforementioned, students need to be proficient in technology to participate in CoPs. An appropriate research design is required to investigate how to form CoPs in this ODeL higher education institution to encourage and stimulate learning and to encourage the sharing of knowledge. The research design will be discussed next.

## **RESEARCH DESIGN**

The research design will discuss the research approach, sampling and data gathering method, trustworthiness, questionnaire design and analysis of the data.

*Research approach*

This research can be described as a quantitative case study (Creswell, 1994; Yin, 1994; Merriam, 1998) as the learning experience of students is investigated relating to a specific event in a bounded context. The quantitative research approach allows researchers to collect quantifiable data in challenge to deliver neutral results (Creswell, 1994).

*Sampling and data gathering method*

A non-probability sampling approach (Patton, 1980: 104) was used through convenience sampling. Participants from the two groups of undergraduate and postgraduate students of the School of Computing (SoC) and School of Management Sciences (SmS) presented a purposive convenient sample, as they were available and inexpensive to this study.

A survey was undertaken with 502 students registered for undergraduate and postgraduate diplomas and degrees at the SoC and SmS. The survey focused on a particular group of 230 females and 272 males of the whole student population at both schools.

An experienced business analyst conducted an online questionnaire using an existing database of undergraduate and postgraduate students at this ODeL institution. Students received an invitation letter to participate in the research project. The questionnaire queried topics such as: a willingness to work in teams; tacit knowledge exchange; influence on social status, relationship and trust building; enabling study skills and decision making and finally, empowerment of innovative opportunities.

*Assessment of trustworthiness*

Participation was strictly voluntary and students were free to decline to participate in this research study, or they could withdraw their participation from the study at any time. Students were informed that anonymity will be protected in any reports, research papers, thesis documents, and presentations that result from this work.

The students completed a questionnaire, which they returned to the researchers electronically. Returning the completed questionnaire to the researchers indicated their willingness to participate. The issues of credibility and reliability in the questionnaire design were considered and incorporated (Creswell, 1994, 2008; Patton, 1980).

*Questionnaire design*

The questionnaire was divided into sections A - demographic information (gender, age, year of study, nationality) and B - five categories/measures, namely: willingness; team preparedness; communication modes; perceived benefits, and who benefits from CoPs. If these categories could be successfully addressed, it was assumed that students would participate in a community of practice. In total the questionnaire consisted of 27 questions and the variety of questions contributed to the richness of the preliminary data by revealing the students' perceptions and opinions with respect to CoPs. A five point Likert scale ranging from strongly disagree to strongly agree was applied in the questionnaire. The concept of COPs was defined in the questionnaire in the beginning.

The responses to selected questions were used to determine what percentages of the students were willing to engage in CoPs, and what percentages of the students were prepared for team work in CoPs. Furthermore, frequencies and percentages were used to determine perceived benefits and what kind of communication modes they would prefer.

*Analysis of data and results*

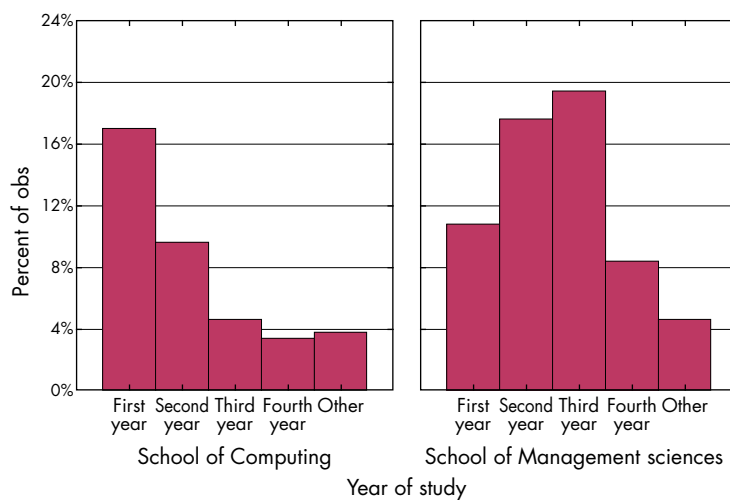
Descriptive and inferential statistics were used to analyse the students' responses.

A. Frequencies of demographics data, gender, age and year of study

A total of 38.8% of the respondents were registered at the SoC and 61.21% were registered at the SmS at this ODeL institution. The nationality of a large percentage (70.0%) of the respondents was black South African; white South African (15.9%); Indian (5.0%); and 8.5% coloured South African.

Only 11.4% of students were enrolled in the fourth year, while 27.7% were enrolled in the first year of study and 0.8% students were enrolled for a master degree. See Figure 1 showing histogram of year of study by faculty below.

Figure 1:  
Histogram of year of study by faculty



The percentages from descriptive statistics reflect a good sample, gender is almost 50/50 and schools' membership is skewed in the ratio 40/60 (40= SoC), (60= SmS). Most of the respondents in the survey were male (54.37%) while the female respondents constituted 45.63%. See Figure 2 histogram of gender by faculty and Tables 1 and 2 on faculty membership.

Figure 2:  
Histogram of gender by faculty

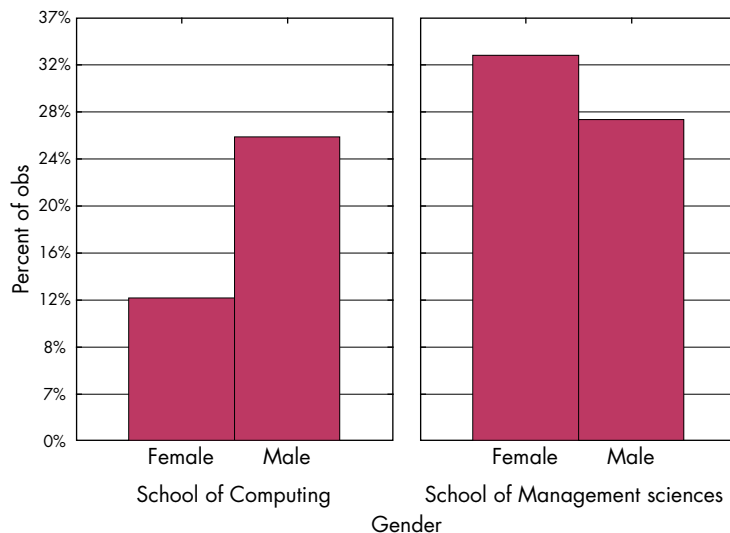


Table 1:  
Faculty\_membership \* Gender Cross tabulation

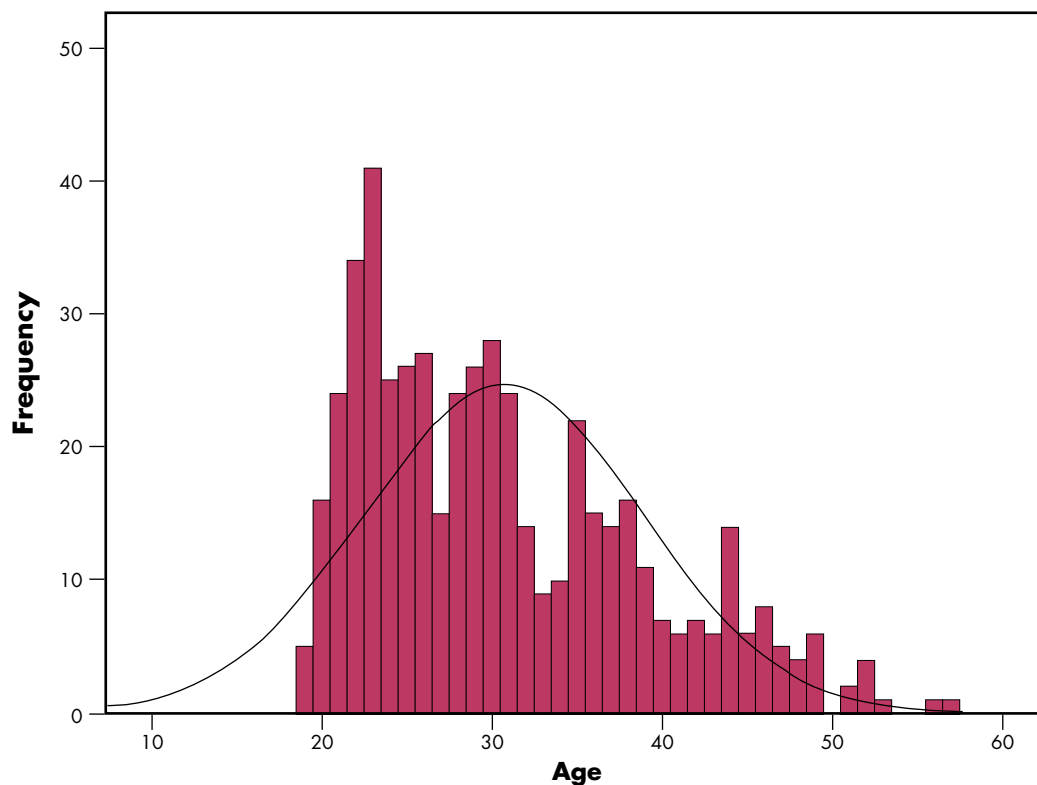
Count		Gender		Total
		1	2	
Faculty_membership 1	1	61	130	191
Faculty_membership 2	2	165	137	302
Total		226	267	493

Table 2:  
Faculty membership \* Year of\_Study Cross tabulation

Count		Year of Study				Total
		1	2	3	4	
Faculty_membership 1	1	85	48	23	173	191
Faculty_membership 2	2	54	88	97	281	302
Total		139	136	120	454	493

The respondents were between the ages of 19 and 57 (97.5%). Of these, 34% were aged between 19 and 25 years; 36% between 26 and 35 years; 16% between 36 and 43 years; and 10% between 43 and 57 years. The age frequency distribution of respondents was relatively uneven with the mean 30.67. See Figure 3.

Figure 3:  
Age of participants





The following paragraphs present the percentages and corresponding interpretations of students' responses in terms of the section B of the CoP survey.

a. Willingness

Q5.1: [I am prepared to share my knowledge and experience with others in the same field]

48.2% of the respondents expressed their readiness and willingness to share their knowledge and experiences with others.

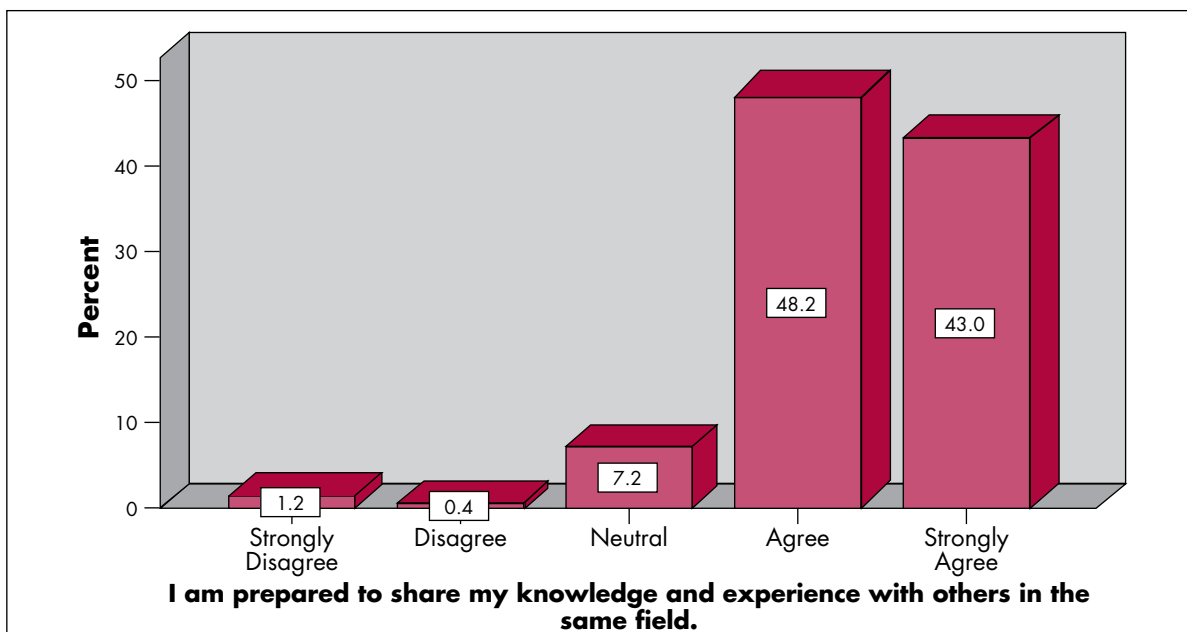
Q5.2: [I would like to share my unique and effective study methods with others]

44.5% of students would like to share their unique study methods with team members indicating their self-motivated willingness to collaborate with peers.

Q5.3: [I would like to feel free to discuss my studies with others]

Students expressed a need to discuss their study-related issues with others. Less than half felt isolated in an online environment as depicted in Figure 4.

Figure 4:  
Knowledge and experience sharing

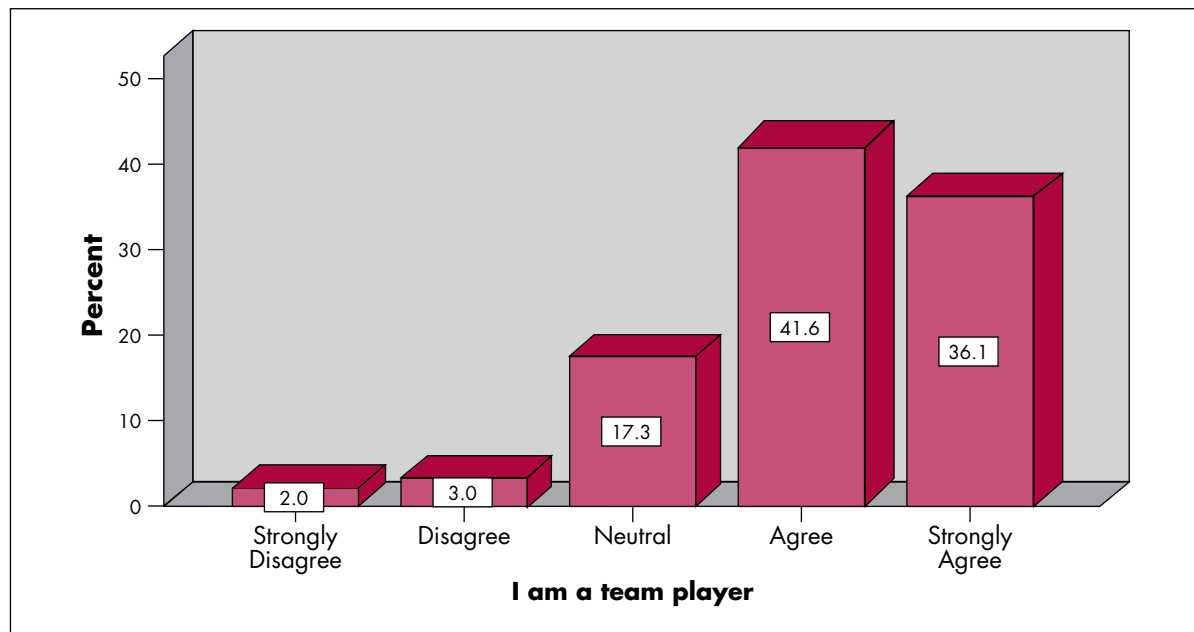


b. Team preparedness

Q6.1: [I am a team player]

The students think that they are good team players with more than half expressing that they have team skills and preparedness to collaborate within CoPs groups as displayed in Figure 5.

Figure 5:  
Team player



Q6.2: [The character of the other members plays a role while sharing knowledge]

45.8% of students share the opinion that the character of their team members (e.g. fairness, reliability, honesty, attitude and ethical values) plays a role in collaborative activities.

Q6.3: [Do you prefer to work alone?]

Only 22.4% of students prefer to work alone. It seems that students feel prepared for the online collaborative learning mode. Social learning is a desired learning paradigm since the separation of teacher and student (Keegan, 1996) 'has a tendency to reduce the sense of community, giving rise to feelings of isolation, distraction, and lack of personal attention' (Besser & Donahue, 1996; Twigg, 1997 cited by Rovai, 2002).

c. Communication mode [Face-to-face] [Online] [Other]

Q7.1 [Which forms of communication would you most use as a participant in a CoP?]

32.9% students prefer a face-to-face form of communication while 67.1% prefer online communication.

Face-to-face communication is especially important for initial contact between community members, to establish rapport (Borthick & Jones, 2000). Thus, a significant number of students prefer online communication. Online environments make synchronous or asynchronous communication possible (Baran, 2006) and students feel less isolated in an online environment. Few students preferred emails (0.8%), SMS and phone communication (0.2%).

d. Perceived Benefits

Q8.1: [By sharing knowledge, my knowledge base will increase]

The respondents (52.6%) believe that knowledge sharing and exchange will contribute to their new and enriched knowledge base.

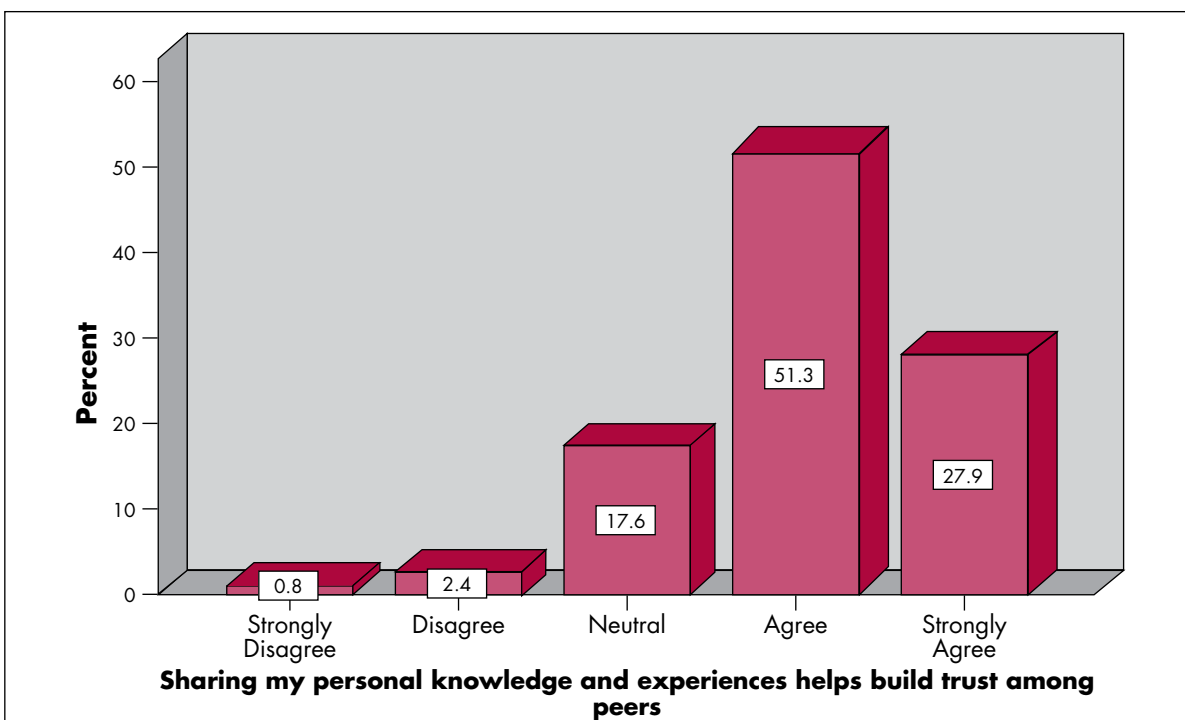
Q8.2: *[Sharing my personal knowledge and experiences will maintain or increase my status amongst my peers].*

The perceptions of 40.2% of the students indicate that social status and therefore self-confidence will be improved leading to more social engagement and success of learning.

Q8.3: *[Sharing my personal knowledge and experiences helps build trust among peers]*

More than half of the students have perceptions that sharing their personal knowledge and experiences with peers contribute towards trust building. 'The lack of trust and the formality of many business practices would work against knowledge sharing' (Standing & Benson, 2002: 647). See Figure 6.

Figure 6:  
Trust building



Q8.4: *[We all possess certain tacit knowledge – unique knowledge. Sharing with others will make us more effective]*

48.5% of the respondents in both schools are confident that possessing tacit knowledge is valuable; sharing tacit knowledge within the contexts of CoPs could contribute to their knowledge growth. Currently, students are not working in CoPs; they are socially isolated, expecting to work in an improved learning environment such as CoPS. Learning occurs when individuals create new knowledge by combining explicit knowledge (for example, books and the internet) with their prior knowledge, normally in tacit form (in a person's head) according to Morse (2000: 426) and Standing & Benson (2002).

Q8.5: *[I will learn more from peers about new developments in my field than from reading literature]*

Students perceive the benefits of reading literature as well as the benefits of interacting with peers which was less than half in terms of new developments in study fields.

Q8.6: *[Associating voluntarily with others to share knowledge and friendships can develop]*

51.3% of the respondents think that CoPs provide abundant opportunities for a friendship necessary for reflective learning.

Q8.7: *[Since voluntary, I can opt out any time]*

CoPs are voluntary allowing its members to pull out any time. The sense of freedom is necessary for the mobility of students. This is visible as 44.9% of students felt free to opt out.

Q8.8: *[Sharing the same identity creates a strong bond amongst the members of CoP]*

The students (47.8%) felt that belonging promotes bonding as a prerequisite for modelling and scaffolding during their learning experience. Wenger (1998b cited by Kathryn, 2002: 223) describes three modes of belonging: engagement, imagination, and alignment.

Q8.9: *[CoPs are created out of passion for one's work and they 'die' from lack of it]*

Only 38.9% support this statement. It seems that students do not recognise the importance of passion that spontaneously develops within CoPs. Wenger & Snyder (2000: 139) point out that '...people are informally bound together by shared expertise and passion for a joint enterprise'.

Q8.10: *[Sharing my personal knowledge and experiences will not be detrimental to my own performance (e.g. detracts from doing other work)]*

49.1% further indicate that CoP activities are not seen as a burden for their other tasks and performance.

Q8.11: *[I have personal knowledge and experiences that would be important for my peers to have]*

43.7% students share opinions that sharing knowledge and experiences is necessary for their peers.

Q8.12: *[Sharing my personal knowledge and experiences will increase my power to influence decisions]*

Decision-making skills are powerful leadership skills due to frequent student-student discussions and interactions (44.1%).

The findings indicate that students perceive benefits of forming CoPs at the ODeL institution. They are willing to participate in communities of practice due to its embedded challenges, a voluntary nature and a wider communication network. Furthermore, the findings offer insight into students' preliminary perceptions about CoPs before an infrastructure is developed across the ODeL institution in terms of forming CoPs and a supporting more focused well-designed communities of practice.

#### B. *Comparative analysis between two schools, School of Computing and School of Management Sciences*

The constructs Willingness and Perceived benefits were compared between SoC and SmS. The statistical tests, Cronbach's alpha, Levene's test for equality of variances and T-test for equality of means were applied on constructs Willingness and Perceived benefits. Due to the limitations of this paper other constructs such as team preparedness and communication mode were not compared between the two schools.

##### i. *Cronbach's alpha*

It was necessary to determine construct validity in term of its appropriateness of inferences made on the basis of measurements; whether the questionnaire measured the intended constructs. Cronbach's alpha was applied to see if the questions from Willingness and Perceived benefits were reliable measures. Both had values greater than 0.8, thus the questions did measure the constructs reliably. The factor score was calculated for each construct by calculating the mean over all the questions for each respondent.

Since the questionnaire contained values 1, 2, 3, 4 or 5 that are discrete values it was not possible to use statistical tests needed for comparison without converting the discrete values into continuous values needed to perform hypothesis tests. The hypothesis tests were conducted for each construct using school membership to split the sample into two. Thus a two sample independent hypothesis tests were used. This is discussed in the next section.

ii. *Hypothesis testing: Summary of hypothesis tests for factor scores*

Factors scores were calculated from the two constructs: Willingness and Perceived benefits. The results are as follows:

*Willingness*

*Levene's Test for Equality of Variances* specify that p-values = 0.373, thus variances are assumed to be equal. Hypothesis H-01 has been accepted.

*T-test for Equality of Means* indicates that p-value = 0.106, thus the factor score mean values do not differ between the two Schools at the significance level of 0.05. See Table 3.

Table 3:  
*Willingness – independent sample test*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
FS_Willingness									
Equal variances assumed	.796	.373	1.621	492	.106	.11267	.06953	-.02393	.24928
Equal variances not assumed			1.669	444.745	.096	.11267	.06752	-.02002	.24537

P-value for Gender = 0.066; H-01 is not rejected. This one is close to the rejection region so there may be a difference that can be tested by future research. P-value for Undergraduate and Postgraduate = 0.745. Thus, H-01 is not rejected at the significance level of 0.05.

*Perceived benefits*

*Levene's Test for Equality of Variances* indicate that p-values = 0.750, thus variances are assumed to be equal. Hypothesis H-02 has been accepted at the significance level of 0.05.

*T-test for Equality of Means* with p-value = 0.166 indicate that the factor score mean values do not differ between the two Schools at the significance level of 0.05. Thus, Hypothesis H-02 has been accepted. See Table 4.

Table 4:  
Perceived benefits – independent sample test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
FS_Perceived_benefits									
Equal variances assumed	.101	.750	-1.386	493	.166	-.06675	.04816	-.16137	.02787
Equal variances not assumed			-1.385	405.641	.167	-.06675	.04819	-.16148	.02799

P-value for Faculty = 0.166 and p-value for Gender = 0.078. Hypothesis H-02 has been accepted at the significance level of 0.05. This applies to undergraduate and postgraduate where p-value = 0.449.

Thus there is enough evidence to conclude that the factor scores for both Willingness and Perceived benefits are found to be equal across schools, gender and undergraduate or postgraduate studies.

## DISCUSSION

This article examined the opinions, perceptions and readiness of students in two schools, SoC and SmS at an ODeL institution in terms of CoPs. Data from the questionnaire were evaluated for quantitative differences. The results of the quantitative analyses showed that students' were willing to engage in learning activities within CoPs (as an answer to research question 1). Students preferred online forms of communications perceiving many CoPs benefits (trust building, knowledge base increase, tacit knowledge exchange, passion, decision making, bonding, friendship, etc.), (in response to research question 2). The results also indicate that students' team preparedness and willingness to use online collaborative technologies could enable the ODeL institution to invest in these social learning challenges (in response to research question 3). Additionally, the results show that students from the SoC did not find CoP of more use since they were more technology literate than students from the SmS.

A quantitative analysis of the data indicated that types/patterns of responses in the two schools were clearly even. Our findings support previous research on CoPs in an open distance learning environment (Johnson, 2001; Kathryn, 2002; Maor, 2003; Kehrwald, 2008). Wasko & Faraj (2000: 155) research results indicate that 'people participate in electronic communities primarily out of community interest, generalized reciprocity and pro-social behaviour'. Findings indicate that students in the ODeL environment have common learning interests and they need collaboration in order to avoid social isolation.

Notwithstanding the reliability issues of having only one instrument to gather quantitative data in the ODeL environment, it is clear that research ideas on CoPs' benefits (e.g. Moore & Thompson, 1990; Towobola & Raimi, 2011) and preferred online communication modes (e.g. Johnson, 2001; Gannon-Leary & Fontainha, 2007) were confirmed (in response to research question 4).

Although these results cannot be generalised, the outcomes of this survey encourage forming and designing communities of practice in ODeL environments. The students' willingness for engagement in CoP groups at this ODeL institution has to be considered. Forming CoPs among postgraduate and undergraduate

students at the SoC and SmS at the institution is a vital step in order to improve specific and cross-field learning outcomes. The findings offer insight into important links in designing CoPs as a chain between leadership and student achievement.

## CONCLUSIONS, IMPLICATIONS AND FURTHER RESEARCH

The quality of ODeL education is important to its stakeholders and well-designed CoPs can invite students and even evoke innovative activities. In view of the specific research questions in this study:

1. What are the opinions of students in terms of their willingness to share knowledge and experiences?
2. What perceived benefits of CoPs exist among students at the ODeL institution?
3. What are the opinions of students in terms of team preparedness and collaborative technologies that can positively influence CoP learning teams?
4. What communication modes are appropriate for CoP learning environments?

The following are some conclusions and implications from this study endeavour:

- Multiple perspectives on willingness, the benefits, and the appropriate communication modes must be determined prior to forming CoPs in the ODeL and face-to-face learning contexts.
- In an environment of trust such as in CoPs, there is continual change and experimentation. In a trusting team environment, learning takes place through corrective actions. This results in team members' willingness to take more risks.
- Students, from the moment they commence their studies, need practice in the use of the various communication modes. Given that most students in this study preferred online communication, they need to become progressively familiar with the idea of CoPs and receive appropriate guidance as to what is expected of them in terms of collaborative learning within CoPs.
- CoPs as a path in learning need to be introduced more widely within ODeL learning contexts through blended, hybrid and mixed-mode of interactions (Martyn, 2003).
- Students prefer online communication modes. However, face-to-face communications are important for initial contact between CoPs members and lecturers.

From a practical perspective, it is necessary to recognise the students' readiness to accept an engagement in CoPs teams. CoPs enablers as discussed may provide a clear path regarding how ODeL institutions can promote a learning culture.

Future research can examine how personal traits (such as attitudes, learning styles, attention, character, creativity and cultural differences) may moderate the relationships between CoPs knowledge enablers and learning processes in an ODeL context.

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