

# DIGITAL FLUENCY OF FACULTY MEMBERS AT AN ODL INSTITUTION

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## ABSTRACT

The commercialization of higher education compels higher education institutions to look at alternative and inclusive ways to accommodate the ever-growing diverse student population. One of the methods is the change to online teaching for distance education students. However, to successfully teach and study online, specific skills and competencies are required from both lecturers and students. The study reported on (phase 1 of a three-year project) in this article, sought to assess faculty members' levels of digital fluency at a major open distance education and learning (ODL) institution. A quantitative, non-experimental descriptive, cross-sectional survey was conducted. The results indicate that faculty members are willing to use new teaching technology, but perceive their own skills to be inadequate. The result of this study might influence tuition policy and address continuous development strategies in the ODL institution.

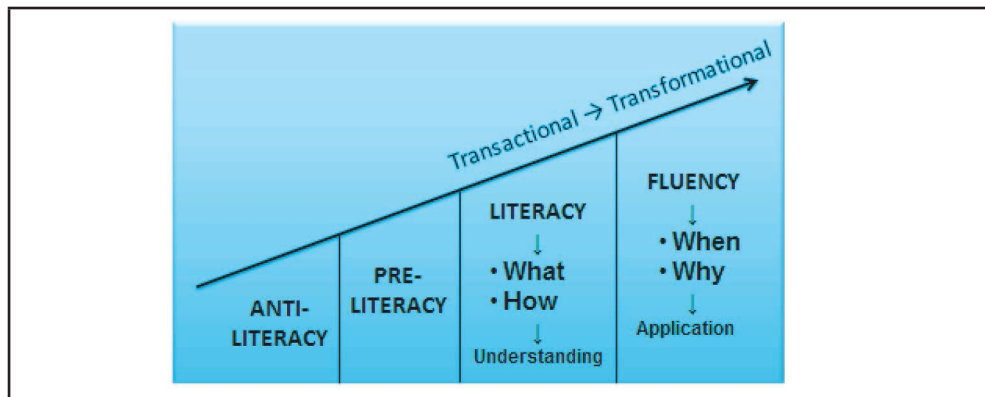
**Keywords:** Continuous professional development; digital fluency; higher education; hybrid learning; open distant learning (ODL); open distance and e-learning (ODEL); teaching technology



## BACKGROUND

Faculty members have a dual obligation and commitment towards students, namely to prepare students for being responsible citizens in a globalised world and to prepare them for ‘graduateness’ (DHET 2012; DHET 2014). Faculty members from open distance and e-learning (ODEL) institutions particularly equip students with discipline-specific knowledge, skills and competencies as well as broader attributes such as ethical decision-making and critical analytical thinking that make them employable while they are being prepared for their future careers (Siemens 2014; Archer and Chetty 2013; Hounsell, Christie, Cree, and Tett 2010; Coetzee et al. 2012; Zimmer 2014a; Gallup 2014). The faculty’s educational obligation and commitment take account of developing students’ metacognitive abilities by introducing information, communication and technology (ICT) skills into the students’ curriculum. These skills empower and equip students to learn, live and thrive in a constantly changing digital environment (White 2013; Steur, Jansen, and Hofman 2012; Prinsloo 2011; Pretoria 2011; Walsh 2013). Although many students enter higher education with some of the needed ICT skills already embedded in their skills repertoire, it cannot be assumed that these students attained the expected level of ICT skills. Therefore, it is crucial that these skills be pertinently taught (White 2013). The Department of Higher Education and Training’s (DHET) policy on the “Provision of Distance Education in South African Universities” also mandates the “appropriate integration of ICT to enhance distance education provision in both public and private universities” (DHET 2014, 7).

Faculty members who need to introduce, teach and use ICT skills must remain up to date in order to personalise the learning process for students (Bray and McClaskey 2014). The logic is that faculty members cannot introduce ICT skills into a curriculum if they, as the drivers of education, are not cognisant of the most recent advances in both their subject content and the available ICT tools to retrieve and utilise such content. It is therefore imperative that faculty members be digitally fluent (transformational level) as opposed to being digitally literate (transactional level) (Demir et al. 2015; Briggs 2011; JISC 2014). See Figure 1.



**Figure 1:** Developmental stages towards digital fluency (adapted from Briggs and Makice 2011)

Digital fluency in essence refers to one's aptitude and ability to effectively and ethically interpret digital information. It encompasses the discovery of meaning, designing of content and the construction of knowledge (Demir et al. 2015). This process is constantly changing and can never be viewed as static. Digital fluency includes the ability to communicate ideas in a digitally connected world through the use of technology (Heine and O'Connor 2014; Briggs and Makice 2011). As such, digital fluency has become a required and essential core competency for faculty members of the 21st century (JISC 2014).

The need for digitally fluent faculty members is supported by the fact that many higher education institutions are gradually moving into a hybrid or fully online mode of educational delivery. It is vital that faculties establish and maintain a presence in the online environment (Grimson 2014; Zimmer 2014b). Familiarity with basic online tools and program applications that support student learning is crucial to maintain such presence (Bates 2015). Unfortunately, many faculty members tend to teach the way they were taught (Mays 2015) and because they were not exposed or introduced to digital technologies during their studies or earlier in their careers, they remain reluctant to embrace these technologies in teaching (Kenan and Pislaru 2012; Majid and Abazova 2013; Sword 2012; Coppola et al. 2010). However, the DHET emphasises the necessity for faculties to be able to support student learning via ICT (van Staden 2014) and the need for faculty members to upgrade their teaching qualifications (DHET 2012). Unfortunately South Africa has an aging faculty cohort (DHET 2012; Yudkevich, Altbach, and Rumbley 2015). Given their ages and the fact that many tertiary academics are either not professionally qualified in teaching and/or have not been exposed to current educational technology throughout their teaching careers (Geary, Ward, and Rowan 2014) an inquiry into the ICT skills of faculty members is needed.

Therefore, a group of four senior researchers (from three different departments) decided to conduct a research project, spanning three years, to determine the level of digital fluency of faculty members (phase 1) and students at the higher education institutions where they were working.

## METHODOLOGY AND DATA COLLECTION

A formal as well as an extensive three-year, multi-layered, multi-disciplinary, inter-disciplinary and trans-disciplinary research project was conducted at the institution referred to above. This article reports on phase 1. Phase 2 was conducted during the latter part of 2016 and phase 3 will only be conducted during 2017 and will be reported on separately.

The population for this study was 40 faculty members who taught at one particular distance education university in South Africa. The target population included faculty members from a specific academic department at the identified higher education institution.

The lens or paradigm for the study was one of positivism which is a more rational, scientific and objectivist approach (Polit and Beck 2012; Dudovskiy 2016). Researchers operating from a positivist paradigm have a certain hunch about a phenomenon and they firmly believe that there is a known reality out there that can be studied. They also believe that reality has antecedent associations. Positivism wants to understand these associations. A well-illustrated example is the element of cultural dictations that influence digital fluency. Positivism lends itself to quantitative research (Polit and Beck 2012) where results can be generalised. It is useful when studying social phenomena, such as digital fluency to make use of a quantitative design where the researcher can delve or probe into his or her hunches for verification (Polit and Beck 2012).

A quantitative non-experimental, descriptive, cross-sectional survey (Bryman et al. 2015; Polit and Beck 2012) was conducted. A survey questionnaire was used to collect data. The basis for the questionnaire was the “Digital Literacy Profile Snapshot (Access, Skills Confidences and Usage Habits)” instrument created by JISC Design Studio and available under a Creative Commons licence (JISC 2015). The questionnaire was modified based on Belshaw’s eight digital literacy elements (Belshaw 2011b) as illustrated in Figure 4, and supplemented by content retrieved from the literature in order to suit the current research context. The survey questionnaire was peer-evaluated and piloted.

An online survey-generating program (SurveyMonkey™) was employed. The data collection instrument consisted of 45 mostly close-ended questions and included both Likert-type questions and ranking questions.

During 2015, an email (using the software program SurveyMonkey™) with the uniform resource locator (URL) to the survey was sent to 40 faculty members

in the department. Two reminders were sent to non-respondents. The response rate was 52.5% with 21 of the 40 faculty members returning the questionnaire. Web-surveys usually have on average an 11% lower response rate compared to other survey methods (Fan and Yan 2010). According to Penwarden (2014), the average response rate of surveys emailed to respondents is 24.8%, which makes the current response rate acceptable (Penwarden 2014). Although 21 respondents opened the questionnaire and answered the first question, four respondents did not answer any of the remaining questions. Thus, the actual number of usable responses is  $N = 17$ .

Ethical clearance (No. 2013/CGS/007) was received from the Institution's research and ethics committee as well as the particular department where the data were collected. All ethical considerations such as honesty, transparency and authenticity were diligently secured. Aspects of beneficence, respect for person and institution, justice, anonymity and confidentiality were adhered to (World Medical Association 2013).

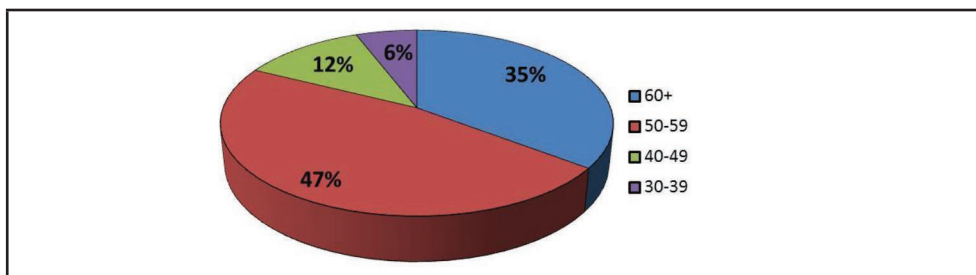
Considering reporting style, the usable number of returned questionnaires was 17 ( $N = 17$ ). Not all respondents answered every question. The frequency of responses per option is indicated by ( $f =$ ), while the total number of respondents who answered the specific question is indicated by ( $n =$ ). Percentages were calculated by dividing the frequency ( $f =$ ) of responses per question by the number ( $n =$  or  $N =$ ) of respondents that answered the question.

The numerical data format lends itself to basic descriptive statistical analyses (Trochim 2006). The 2014 IBM SPSS Statistics package was used for analysis. This greatly enhanced the validity and reliability of the results. Data are presented in summarised format such as frequency tables with percentages and are displayed in different visual displays (Creswell, 2014).

## RESPONDENTS' PROFILE

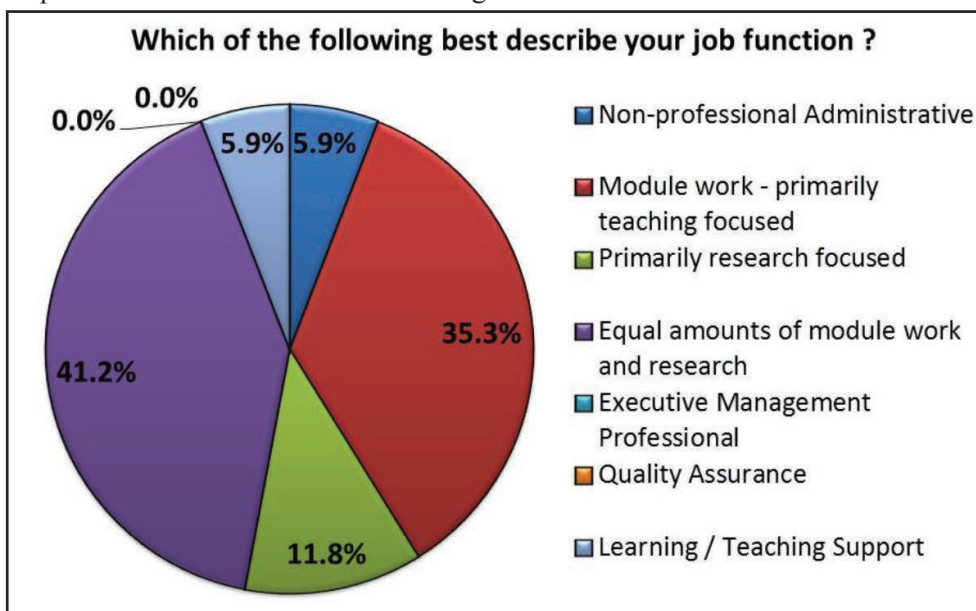
Of the 17 respondents, the majority ( $f = 13$ ; 76.5%) had a Doctoral degree and 17.6% ( $f = 3$ ) a Master's degree as their highest qualification. A Bachelor's degree only was one respondent's highest qualification. The respondents' ages ranged from 37 to 64 years of age and three respondents (17.6%) were younger than 50 years of age. See Figure 2.

There is a concern that internationally, the majority of faculty members in higher education institutions are older than 50 years of age and that the number of young professionals joining the academia is not adequate to replace the aging and retiring personnel (Falk 2014; McDermid et al. 2012). This more mature age might also be indicative of a less than required exposure to ICT during respondents' earlier academic careers (Jæger et al. 2015; Moretti et al. 2014).



**Figure 2:** Age distribution of respondents (N = 17)

Six (35.3%) of the respondents' main academic responsibility was teaching, while 41.2% ( $f = 7$ ;  $N = 17$ ) indicated that they had a dual responsibility of teaching and research. Two respondents (11.8%) indicated that their main responsibility was research-related activities. See Figure 3. It thus appears that the majority of respondents were involved with teaching.



**Figure 3:** Job description (N = 17)

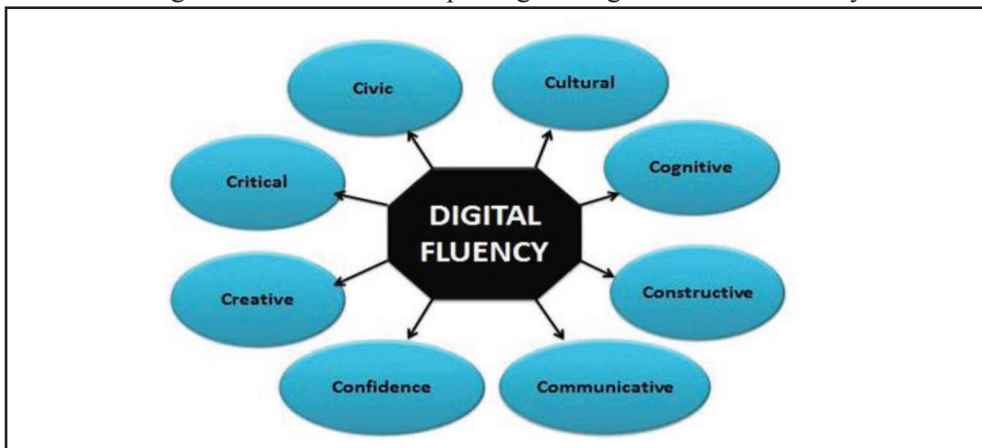
Of the respondents, only 17.6% ( $f = 3$ ) were male. Although this might appear as non-representative of that gender, it must be kept in mind that the department at which the study was conducted reflects a female-dominated profession. Statistics on the professional body's website indicate that at the time, only 9.6% (11620 out of 121507) of the professional corps entered on their register, were male (Department of Health 2014).

The racial distribution of the respondents was almost even. Of the respondents, 47.1% ( $f = 8$ ) are classified as white and 52.9% ( $f = 9$ ) as black. This, however, does not reflect the equity advances the department has achieved.

## RESULTS AND DISCUSSION

### Categorising of results

Results were analysed and are reported on according to Belshaw's eight digital literacy elements (Belshaw 2011b; Belshaw 2012) as illustrated in Figure 4. Although Belshaw uses the term digital literacy in his thesis and other writings (Belshaw 2011a), for the purpose of this discussion, the eight elements (Figure 4) will be used as over-arching themes to facilitate reporting findings in a structured way.



**Figure 4:** Eight elements of digital fluency

### Cultural

The cultural element is first of all a deeply personal perception. It encompasses the digital context and how the individual experiences it – whether it is real or not. This element includes the underlying concerns, norms and habits relating to the particular purpose of a specific digital tool (hardware) or software (program). On an organisational level (employer-related), it includes the organisational culture surrounding the use of certain hardware and software as well as the individual's perception of this (Belshaw 2011b).

When asked various questions about policies and “red tape” or bureaucracies that might prevent faculty members from experimenting with various programs and applications (those not prescribed by the institution), the majority of respondents indicated that their employer had an enabling approach, that allowed them to experiment with different approaches and programs. See Table 1 for a summary.



**Table 1:** Summary of perceptions with regard to the use of alternative software programs

Answer Options	Strongly agree & Agree	Strongly disagree & Disagree	Not applicable	Response Count
	<i>f</i>	<i>f</i>	<i>f</i>	<i>n</i>
The institution allows their lecturers to freely experiment with different software programs and applications to enhance their teaching	10	3	1	14
There is a lot of red-tape before one can use alternative programs and applications for teaching	5	7	1	13
I have enough time at work to experiment with alternative programs and applications for teaching	4	9	1	14
The institution's policies are not enabling lecturers to use alternative programs and applications for teaching	5	8	1	14
The institution supports the use of alternative programs and applications for teaching	11	1	1	13
ICT cannot provide support to use alternative programs and applications for teaching	7	5	1	13

Although the employer, according to the respondents' feedback, encouraged or allowed the use of software programs not prescribed or owned by the institution, 64.3% of the respondents ( $f = 9$ ;  $n = 14$ ) indicated that they did not have time (resources) to experiment with programs. They also indicated that functional support was lacking. In total 53.8% of respondents ( $f = 7$ ;  $n = 13$ ) who answered this question, indicated that the IT (or Information Technology / Management) department did not provide support to employees who use alternative software programs. This desired IT support is echoed in other higher education institutions as well (Geary et al. 2014).

It seems as if the majority of respondents made use of mobile technology. Apart from the laptop (100%), 85.7% ( $f = 12$ ;  $n = 14$ ) of the respondents used their smartphones to connect to the Internet. The respondents also reported confidence in their own skills to operate their mobile phones ( $f = 12$ ;  $n = 14$ ; 85.7%) and tablets ( $f = 8$ ;  $n = 12$ ; 66.7%).



This enabling culture conversely does not always translate into the respondents' personal preferences. Table 2 indicates some of the activities in which faculty members are involved socially. The majority of respondents ( $f = 13$ ;  $n = 15$ : 86.7%) use Instant Messaging, while 66.7% ( $f = 10$ ;  $n = 15$ ) also watch YouTube™ videos and 46.7% use Facebook.

**Table 2:** Social applications and activities

<b>Question: In my personal and social life I do the following (tick all that apply):</b>		
	<b>Frequency (f)</b>	<b>Number (n=)</b>
Use social networking websites (e.g. Facebook)	46.7%	7
Download podcasts	20.0%	3
Use instant messaging or chat (e.g. MSN, iChat, MXit, WhatsApp)	86.7%	13
Video-chat or video-conference (e.g. Skype, ooVoo)	33.3%	5
YouTube (watch and/or download)	66.7%	10
Upload video or photo content onto the internet	40.0%	6
Use on-demand video (e.g. iPlayer, 4OD)	0.0%	0
Use advanced functions on my mobile phone (e.g. Mobile TV, Web browser, GPS or email)	46.7%	7
Participate in online discussion groups or chat rooms	40.0%	6
Take part in an online community, e.g. a "virtual world" such as Second Life	13.3%	2
Blogging (e.g. wordpress, blogspot)	6.7%	1
Micro-blogging (e.g. Twitter or similar)	6.7%	1
ePortfolio (e.g. LinkedIn)	20.0%	3
Google Hangout	0.0%	0
Google Docs	13.3%	2
Cloud-storage (DropBox, Mega)	20.0%	3
In addition to download and upload of media or content, I can also adapt media	13.3%	2

However, when asked whether they would consider using social media to teach and connect with students, only 18.8% ( $f = 3$ ;  $n = 16$ ) indicated that they would be keen to do so. Another 25% ( $f = 4$ ;  $n = 16$ ) indicated that they were willing to do it, given that 'someone' teaches them how. The largest component of respondents either said "No, I would prefer to keep my personal life separate from my teaching role" ( $f = 5$ ;  $n = 16$ ; 31.3%) or that they were unsure about this because they had a few reservations ( $f = 4$ ;  $n = 16$ ; 25%).

This indicates how faculty members' own perceptions and beliefs (cultural element) directly influence their decision whether to incorporate the new trends into their teaching approaches. It relates closely to Belshaw's conclusion that the utilisation of digital technologies has moved away from barriers such as affordability and are much more related to cultural and social factors and the "habits of mind" (Belshaw 2011b, 207).

## Cognitive

The cognitive element emphasises that the "'mind-expansion' comes through the co-creation and contextualization of digital literacies" (Belshaw 2011b, 208). It is about using digital tools more intelligently, expanding the mind of the user and allowing him or her to look at the world differently (NCREL 2003). The concept of co-creation was illustrated when respondents were asked whether they took "*part in an online community, e.g. a 'virtual world' such as Second Life*". Only two of the respondents (n = 15; 13.3%) answered positively.

Co-creation also includes collaboration in a group or team context. Only 29% of the respondents (f = 4; n = 14) indicated that they were confident about using an online collaborative application or software program.

## Constructive

The constructive element of digital fluency touches on the creative side of the faculty member; using existing content and mixing it with a new approach or application to create something new (Kallinikos, Aaltonen, and Marton 2013; Belshaw 2011b). The majority of respondents indicated a confidence level about using MS Word (100%) and PowerPoint 86% (f = 12; n = 14) to create new content. The author experienced that MS Word was used on a regular basis to write study material (tutorials) and compile written assessments. PowerPoint was seldom used for training purposes as the institution being studied is a distance education institution with the current mode of delivery paper-based. PowerPoint presentations were then mostly used for workshops and conference presentations. In a follow-up question, the respondents were asked about training needs regarding the entire Microsoft package. Only 17.6% of the respondents indicated a training need on the expanded package, which aligns with the previous response.

When asked about training needs, the respondents indicated that they wanted to learn how to use various software programs to create or construct new content for students. See Table 3.

**Table 3:** Individual training needs regarding the use of technology

Answer Options	Frequency (f)	Number (n)
LMS (learning management system) (e.g. Blackboard, Moodle, etc.)	52.9%	9
Creating a pdf	17.6%	3
Using Podcasts	47.1%	8
Creating Podcasts	52.9%	9
Using video-clips	35.3%	6
Creating video-clips	70.6%	12
Using URLs and hyperlinks to websites	47.1%	8
Using computer software such as PowerPoint, Word, Excel, Outlook (e-mail), etc.	17.6%	3
Effectively browsing the Internet	17.6%	3
Using social media (Facebook, Twitter, etc.)	58.8%	10

From Table 3 it would appear as if the greatest need for training is creating video-clips (70.6%). This links with the second most pressing need, namely using social media followed by knowing how to create podcasts and using a learning management system (LMS). All of these relate to construction creation and communication although some are one-way forms of communication.

When asked whether they would like to sign up for formal training on using technology for teaching and/or learning, 26.7% ( $f = 4$ ;  $n = 15$ ) of the respondents indicated that they would register for formal (Master's degree) studies, while an equal number indicated that they would, but only "if it is not for too long". Five respondents were indecisive, choosing the "maybe" option. The minority of respondents ( $f = 2$ ;  $n = 15$ ; 13.3%), indicated "[d]efinitely not". The collated impression that one gets is that most of the respondents would be willing to undergo some form of training to empower them to create or construct content for their students.

Belshaw (2011b) emphasised that the constructive element is about the appropriate use, reuse and remixing of content to enable the user to create something new. He aligns the constructive element to the cultural and communication elements and indicates that the eight elements form an overlapping matrix (Belshaw 2011b).

## Communicative

The communicative element refers to how faculty members utilise and understand the tools and programs to enhance communication with their students (Classle 2011). It includes the methods and software programs that they use to create messages.

Micro-blogging such as Twitter™ does not seem to be a popular tool as 93% (f = 13; n = 14) indicated that they either did not use it or needed help to use it. Blogging, Wiki's, social bookmarking and Flickr™ also appear to generate low interest or use. See Table 4.

**Table 4:** Confidence in own skills (n = 14)

<b>Answer Options</b>	<b>I have not used this/ can't use this</b>	<b>I'm not that confident and need help</b>	<b>I can do this quite well</b>	<b>I believe I am HIGHLY confident/ competent/ proficient in this</b>
	<b>f</b>	<b>f</b>	<b>f</b>	<b>f</b>
I have a blog, edit my blog	10	3	1	0
Collaborating online – (such as participating in a forum, contributing to a wiki, group work online)	5	5	3	1
Create my own wiki site/page, edit a wiki, invite others to edit my wiki	10	3	1	0
Social bookmarking/sharing (such as delicious, CiteULike)	10	3	1	0
Flickr (or similar alternative) – collating, and sharing photos	10	3	1	0
File storage and sharing (such as Dropbox)	1	7	4	2
FaceBook – communicating with & finding friends, upload images, chat	7	1	1	5
FaceBook – aware of how to use the security settings	7	1	3	3
I am on Twitter - I follow people, tweet, use hash tags	11	2	0	1
Instant messenger systems - send messages, audio/video chat, group chat, add friends, block people	4	3	5	2
Professional networking sites – such as LinkedIn	4	2	5	3

The use of instant messaging services appears to be popular, with 87% of the respondents (f = 13; n = 15) having indicated that they used micro-bloggings for daily communication with friends and relatives. However, in answer to a control question (Table 4), the respondents indicated an even 50/50 self-assurance in their own skills.

## Confidence

Confidence refers to the faculty member's willingness to experiment with new tools and applications and their willingness to take risks and the institution's attitude towards a 'trial-and-error' approach with newer technologies. The responses to the statement "My skills regarding the use of digital apps (applications) and Web2.0 tools" are summarised in Table 5.

**Table 5:** Perceptions with regard to own skills

Answer Options	Frequency (f)	Number (n=)
I can teach others in my Department	6.3%	1
I am comfortable with tools and applications on our university's LMS/Learning Management System (e.g. Official LMS, Blackboard, Moodle, etc.) and other programmes	6.3%	1
I can help myself but can do with extra assistance / help	50.0%	8
I can use a few of the tools on our LMS (e.g. Blackboard, Moodle, etc.)	31.3%	5
I am in serious need of assistance	6.3%	1

A concern is that only one respondent (6.3%) felt confident enough to teach or assist other colleagues in the department although willingness does not always stem from ability. Half of the respondents ( $f = 8$ ;  $n = 16$ ) were able to "help myself" but indicated that they needed additional assistance. This is concerning, as one would expect faculty members as drivers of education at an ODeL institution that embraces online learning, to be comfortable and skilled in the use of these applications. This situation is also reflected by Howard et al. (2005) who found that lack of confidence in the use of teaching technology is a reality in academia.

**Table 6:** ICT general - Confidence in own skills / abilities

	I have not used this/ can't use this	I'm not that confident and need help	I can do this quite well	I believe I am HIGHLY confident/ competent/ proficient in this	n =
All the main features of Word	0	0	5	9	14
All the main features of PowerPoint	0	2	6	6	14
All the main features of Excel	0	7	6	1	14
Install software on a PC	4	1	9	0	14

	I have not used this/ can't use this	I'm not that confident and need help	I can do this quite well	I believe I am HIGHLY confident/ competent/ proficient in this	n =
Use Antivirus software to identify and sort out a computer virus	3	3	6	2	14
Mac/PC literate – cross platform skills. I can use both platforms	9	2	3	0	14
USB sticks/memory cards – storing and transferring information	0	1	4	9	14
Using email to send messages and attachments	0	0	3	11	14
Printing documents/information	0	0	3	11	14
Accessing the Internet through WiFi or network cabling	0	0	7	7	14
Browsing and navigating on the Internet	0	0	7	7	14
Watching videos and listening to music on the Internet	0	2	5	6	13
Registering and making bookings on the Internet	1	1	5	7	14
Text messaging (SMS) and e-mails via a mobile device (e.g. Smartphone or tablet)	0	0	4	10	14

Although the respondents indicated that they need assistance with the institution's systems and software, it seems as if they do manage and feel confident about the use of basic applications on a functional level with the day-to-day functionalities as illustrated in Table 6. One would expect that those respondents with more years of experience would be more confident about the use of the tools to teach via the distance education mode. Belshaw (2011b) emphasises that confidence as it relates to the digital world, and therefore also the institution's system, is based on the person's comprehension of the digital environment in which he or she finds themselves. This refers to the level of confidence or certainty with which they would be willing to experiment and try new applications to enhance their current practices and not just remain in the familiar day-to-day functionalities of a given system.

## Creative

The creative element includes a paradigm shift where one tries out new approaches with regard to familiar, previously-used techniques, such as allowing and encouraging the use of collaborative online documents for asynchronous group-work (instead of the old class group-work activity) (Belshaw 2011b). It also entails new activities and applying a new approach, for example, moving away from sit-down summative assessments to interactive online formative and continuous assessment. But the focus should not be on technology *per se*. Creighton (in LaBonte 2008, 281) reiterates that “effective integration of educational technologies has more to do with pedagogy than it does technology”. It therefore implies adjusting didactic or teaching methods.

With regard to the distance education institution that is being studied, the vision is to be more student-centred. The question then is: Can technology be utilised to remove the ‘distance from distance education’? (Fisher 2009). Currently students receive a tutorial letter that provides information regarding the upcoming exams. However, video-conferencing is available and utilised in certain modules for this purpose, but only 36% ( $f = 5$ ;  $n = 14$ ) of the respondents indicated that they view themselves as skilled in using this technology. In addition, only two of the modules for the degree programme offered are currently non-venue based, allowing for a more “creative” approach to teaching, learning and assessment.

Communicating via the virtual learning management system (VLMS) instead of via written tutorial letters also seems to be a skill not yet acquired by all faculty members. Of the respondents 64% ( $f = 9$ ;  $n = 14$ ) indicated that they did not perceive themselves as confident about using the VLMS and 86% ( $f = 12$ ;  $n = 14$ ) did not feel confident to create and upload content on the VLMS. The concern is that apart from the tutorial letters, the VLMS is the main method of communicating with students.

Therefore, a new creative approach is needed for faculty members to teach in new ways within an adapted creative paradigm where approaches are redefined (Belshaw 2011b) and the educational lens adjusted. There is a need for faculty members who are willing to challenge the traditional way of doing and adapt to an evolving digital environment where many paper-based restrictions are lifted and more creativity is possible (Belshaw 2011b).

## Critical

Every type of technology “fosters approaches which eventually become conventions” and therefore necessitates careful reflection (Belshaw 2011b, 213). Reflection forms part of the critical element. Reflection is an important component of emotional and intellectual maturity where one can distance oneself from the situation and objectively determine what works and what does not work (Turner 2013; Pappas 2012). Although this aspect was not specifically assessed in the study, certain aspects where faculty members had to use critical judgement were explored as indicated by some of the active verbs contained in the items in Table 7.



**Table 7:** Being critical of own skills

Answer Options	I have not used this/ can't use this	I'm not that confident and need help	I can do this quite well	I believe I am HIGHLY confident/ competent/ proficient in this	n=
	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>	<i>n</i>
Use the <i>LMS</i>	0	1	6	5	12
Understanding and considering copyright when using or uploading online content	0	5	6	2	13
Information seeking using search terms to find information (Google)	0	1	7	5	13
I can refine searches using Boolean searching techniques	2	5	5	1	13
Using information for own use (comparing, collating and evaluating a range of information sources)	2	4	4	3	13
I can use an online library catalogue e.g. the university's library system to find formal journals/academic papers/ books/e-books	0	2	6	5	13
Finding official newspaper archives for educational use	1	4	5	3	13
Evaluate whether a web source is (valid/reliable/trustworthy/authentic/credible)	3	5	4	0	12
I know how to reference information I found online (e.g. journal articles, e-books, websites)	0	2	8	3	13
Searching subscribed university databases (such as Infotrac, emerald, InTute, LexisNexis)	2	2	8	1	13
Reading e-books	0	2	7	4	13
Searching Google Scholar	0	1	7	5	13

From an ethical and legal point of view, it would appear as if faculty members felt confident about their ability to determine copyright infringements but not to identify

trustworthy journal content ( $f = 8$ ;  $n = 14$ ; 62%). The latter is however a “critical” issue considering the faculty’s drive towards learning in a time of knowledge explosion. This is an important aspect as the members need to provide guidance to students busy with formal studies. This once again points to a capacity-building or mentoring opportunity in the specific department.

## Civic

The **civic** element is a catalyst for social change. It is about society, participation, social justice and civic responsibility. It refers to how people self-organise into groups and instantly connect (Belshaw 2011b). It includes using digital technology for the greater good by promoting public good (NCREL 2003). This links to the “Green Drive” of the institution at which the research was conducted, where the aim is to go paperless. Utilising electronic submissions of assignments and marking or grading on-screen is a direct attempt to conserve paper. The majority of respondents 86% ( $f = 12$ ;  $n = 14$ ) indicated that they use online and onscreen tools (jRouter™) to grade assignments.

The digital environment has created platforms where people can connect and communicate outside the formal organisational structures (Belshaw 2011b). This has various implications for faculty members in the sense that students can connect and consult outside the parameters of a formally constructed learning environment.

## CONCLUSION

The study provides evidence that faculty members view the institution as enabling and allowing them to experiment with new hardware and software. However, it was evident that faculty members themselves feel inadequately prepared to deal with the technologies available and that few of them are currently using alternative approaches and techniques. This emphasises a dual responsibility. First, the institution has to provide training opportunities for its faculty members. Second, faculty members must take responsibility for their own development and become the lifelong learner they encourage their students to be. Most of the results are an indication of a developmental need in the department, if not institutional, and it is recommended that the results be used to compile a training and development programme regarding digital fluency as part of capacity building for faculty members.

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