Can you teach an old dog new tricks? – A case study using an electronic responsive system in an academic development workshop

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ABSTRACT: Educational technology has become ubiquitous and widespread in higher education across the globe. It has also penetrated academic development workshops to enhance participation by faculty staff members. The purpose of this article is to highlight the benefits of using an electronic responsive system (educational technology) in an academic development workshop that was aimed at creating awareness among academic staff members of a refreshed approach to the setting of assessments within specific disciplines. A multiple case study of two universities in South Africa is used. Both quantitative and qualitative data was obtained from the participants who attended the same workshop offered at two different universities, using a pre- and post-questionnaire. Results indicate that the majority of the participants enjoyed the practical application of the material that was mainly conveyed using educational technology, which two-thirds of the participants really enjoyed using. A collaborative strategy is recommended using educational technology to create awareness among academics of refreshed or innovative teaching practices conveyed in academic development workshops.

INTRODUCTION

Can you teach an old dog new tricks? This idiom is often used to point to people who find it very difficult to adjust to or adopt, a new way of doing something. For example, some elderly folk may find it very difficult to adapt to new trends in technology, including the latest cell phones, Internet banking and on-line digital libraries. However, this idiom may also be applied to academics who have been around for many years and who struggle to adopt educational technologies.

It has been reported that old academics do not prefer new innovations and are afraid to lose the benefit of their existing closed society [1]. These new innovations in teaching may include, among other, learning management systems [2], social media [3], electronic responsive systems (ERS) and computer simulations [4]. Moreover, academics in general may not be fully convinced of the value of a new or refreshed pedagogical approach or educational technology within their own field of discipline. This, in turn, may create resistance, resulting in the idiom mentioned at the outset.

One way to lessen this resistance may involve the use of educational technologies to convey the message of new or refreshed pedagogies within an academic development workshop. This intertwining, or fusion, of technology, pedagogy and a developmental workshop may have the potential of creating awareness among older and younger academics about the value and amalgamation of these technologies and pedagogies into their own teaching practice. It has been reported that academic development workshops are successful tools of change in teaching practice and that post workshop evaluations serve as indicators of possible impact [5]. Current workshops need to take the path of innovation as innovation breathes life into academics [6]. On the other hand, there is a clear message that these workshops be tailored to the distinctiveness of each academic's discipline, as attempts to overrun the individual departments and disciplinary characteristics may meet with resistance [7]. Kreber et al also argued along this line and stated that academic development should focus on situational wisdom rather than large quantities of technical knowledge [8].

The purpose of this article is to highlight the benefits of using an ERS (called *clickers*) in an academic development workshop that was aimed at creating awareness among academic staff members of a refreshed approach to the setting of balanced assessments within their own specific disciplines. The article firstly reviews the challenges often associated with academic development workshops. Then, the discussion turns to describing how the ERS was used in such a workshop. The research methodology is then presented, followed by the results and conclusions.

CHALLENGES ASSOCIATED WITH ACADEMIC DEVELOPMENT WORKSHOPS

Academic development workshops should be situated within existing academic cultures [9], focus on conceptual change [10], allow for the building of capacity [11], be grounded in the daily demands of academic work and take place in

response to particular projects and responsibilities [12]. Vorster and Quinn concur that relevant academic development workshops are essential to quality education as they enable academics to learn new and innovative teaching and learning strategies [13]. Education is dynamic and constantly changing throughout the world necessitating academics to reflect on new and refreshed teaching and learning strategies in higher education. Academic development workshops enable this reflection as they promote a culture of critical reflective practice among academics [14]. Thus, academic development workshops are very critical and consequential in the higher education context. As such, they need to be facilitated by knowledgeable and experienced academic developers who have strong academic identities [15]. In South Africa, universities have units or centres, which are entrusted with the responsibility of offering academic development workshops to staff [16]. These workshops are aimed at continuous professional development of academics in order to improve teaching and learning within the university context.

Despite the good intention of academic development workshops, it is often a struggle to meet its key goal of improving quality in teaching and learning due to a number of challenges [15]. Ndebele postulates that huge workloads, which lecturers have is the major constraining condition, which prevents them from attending academic development workshops [14]. Their hectic classroom timetables allow little time to accommodate these workshops. In some instances, negative attitude towards these workshops prevent some academics from attending them. Ndebele reiterates that academics in South Africa hardly attend academic development workshops due to a negative attitude on their part [14]. Some feel that it is a waste of time, while others feel that their way of teaching requires no adjustment. A similar situation exists in Zimbabwe, where academics also refrain from attending academic development workshops due to their negative attitudes [17]. They prioritise research related workshops as opposed to teaching and learning workshops, as promotion is usually depended on their number of research publications rather than on their teaching practice. This results in academics marginalising teaching and not attending academic development workshops as they rather strive to build their research reputation. This is especially experienced in the engineering field, where academics are required to be specialists in their discipline rather than in education.

It has been reported that engineering academics are typically more familiar with the concepts of projects in their professional practice than with concepts of engineering education [18]. In other instances, faculty staff disassociate themselves from academic development workshops, because of a misconception that support staff lack in-depth disciplinary content [19]. The misconception arises from the wrong assumption that since academic staff development is not discipline specific, its essence and legitimacy is questionable, as it does not have its own defined literature, standards and language that are commonly found in many disciplines. This perspective results in academic development workshops being viewed negatively as a *generic practical and instrumental activity* [20], which lacks in-depth disciplinary content.

Some academics are sceptical about attending such workshops as they believe it cannot enhance their skills or abilities [21]. Such scepticism results in absenteeism. Finally, resistance to change, especially by older academics who have been teaching for many years, contributes to absenteeism in these workshops [21]. Some older academics are reluctant to try new things or teach the same content using innovative or refreshed pedagogies. One may wonder whether older academics are open to new, refreshed or innovative pedagogies and to the use of educational technology in their teaching practice. This is tantamount to the idiom in the title of this article -…*Can you teach an old dog new tricks?*

USING AN ERS IN AN ACADEMIC DEVELOPMENT WORKSHOP

Academic development workshops should not be top down approaches. Instead, they should involve equal participation by all the attendees [22]. This key requirement is attained by the use of an ERS in a workshop environment, as leveraged workshop participation is maintained. Some academics tend to be shy and reserved, resulting in their voice not being heard in academic development workshops. However, it is vital that each academic's voice be heard to encourage the following:

- Agency - this refers to the capacity of individuals to act independently and to make their own free choices [23].
- Ownership - refers to the importance and need for individuals to actually participate by discussions, choice, responsibility and decision taking [24].
- Active learning - this helps academics to become personally involved in the discussions, moving away from a passive learning style, which is not really conducive to fostering long-term retention [25].
- Satisfaction of learning - this results when each academic learns from his or her own misconceptions, as their perspectives were shared and scrutinised by others in a *secretive* way [26].

The academic development workshop, reported in this article, made use of three separate PowerPoint presentations. The main presentation contained the structure of the workshop, giving the introduction, importance and outline of the workshop along with key theoretical principles. Two hands-on activities were included in the workshops that were outlined in two separate PowerPoint presentations. These two activity presentations must be saved individually to retain the responses of the participants for future analysis. Hands-on activities in workshops would enable thorough exploration of key content or concepts [27], which in this workshop would be the setting of balanced and consistently structured assessments. These activity presentations require participants to engage with a set of questions that require the use of an ERS transmitter (remote unit that looks like a calculator). The ERS receiver (connected to the USB of

a notebook) collects, in real-time, the voluntary responses of each participant (agency involved) who has his or her own transmitting device (active learning as keys need to be depressed). This is done wirelessly with the total number of participants being shown on the presentation slide, which enables the facilitator to determine when to display the results. No threat of victimisation or intimidation can occur as the responses are recorded anonymously. After all the participants have responded, the results are visually displayed on the presentation slide, for all to see and analyse (this contributes to ownership as each contributes to the discussion).

The discussions surrounding the real-time results enable the participants to reconstruct their knowledge and correct any misconceptions (satisfaction of learning involved), which they have with regard to the topic under consideration. The real-time results further enable the facilitator to spend more time focusing on problem areas or misconceptions in order to achieve the intended learning outcomes of the workshop [28]. It also enables the participants to understand where they went wrong in terms of their perceptions, giving them valid useful suggestions to reconstruct their thinking [29]. The workshop closes with succinct conclusions encouraging the academics to follow through on the practical suggestions given in the workshop. A register is completed where the participants may enter their email addresses. These are used to communicate the post-questionnaire to the participants, as the ERS cannot collect extensive qualitative data.

METHODOLOGY USED IN THIS STUDY

A case study is used with quantitative and qualitative data obtained from the same workshop offered at two different universities in South Africa. This was done at university A with academics from engineering (n = 11), and then at university B with academics from the education department (n = 11). The workshop has been offered on a regular basis since 2008 [30] to specific delegates attending national and international conferences in South Africa relating to teaching and learning in higher education. However, in both cases it was the first time it was offered to academics from a specific discipline at two different universities in South Africa.

The main purpose of the workshop focuses on the balance that must exist between higher- and lower-order questions in final assessment papers, encouraging academics to make use of a limited number of specific illustrative verbs derived from Bloom's taxonomy in formulating effectual questions. Workshops activities were designed using TurningPoint software, where PowerPoint presentations are made interactive with academic feedback immediately being captured by the software and displayed for the attendees to review and analyse.

A brief profile of the participants is gathered at the start of the workshop, which also serves to train the participants in using the ERS. This profile is presented in the results to contextualise the discussion. This includes their number of years in academia and their highest academic qualification (and if they possess a teaching qualification). The participants were asked what they hope to learn in the workshop (quantitative data from a close-ended question in the pre-questionnaire). Their responses are captured in order to determine their expectations at the start of the workshop, which are then compared to the participants' feedback (quantitative and qualitative data obtained) given at the end of the workshop. This is done in order to determine any possible impact of the workshop (post-questionnaire used).

RESULTS AND DISCUSSIONS

Figure 1 shows the profile of the participants who attended the workshops. The experience of the academics, in terms of years spent in academia, is shown on the right-hand side of each graph. Four participants from engineering (left hand graph) have more than six years of academic teaching experience in higher education, while nine staff from the education department (right hand graph) reported this. This suggests that more than half (4 + 9 = 13, when n = 22) of the participants have established their own teaching practice, having been around for a number of years within their own field of expertise. These may be perceived as *old dogs* from the idiom contained in the title of this article.
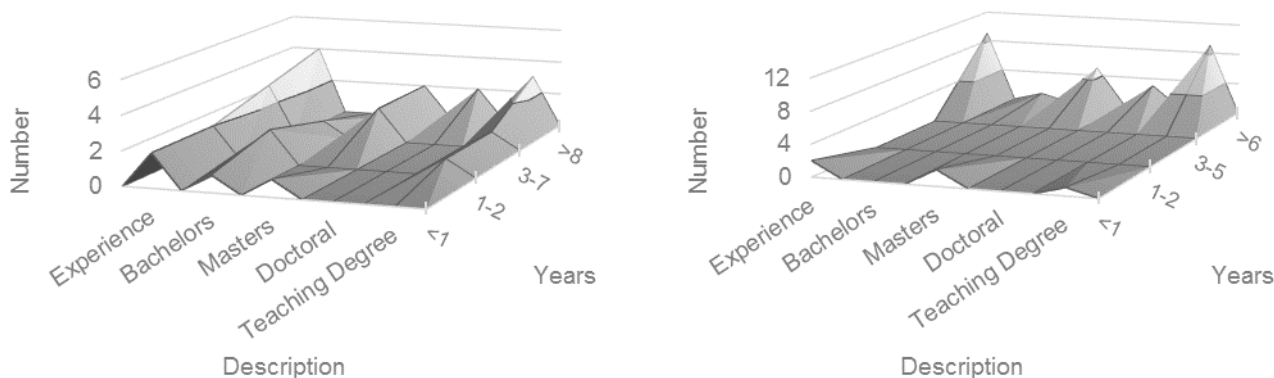

Figure 1: Profile of the participants in engineering (left n = 11) and in education (right n = 11).

While teaching practice is influenced by educational philosophy, various other factors contribute to the adoption of a particular teaching style, such as experiences as a primary, secondary and college student [31], experiences as

an educator, and participation in professional development activities [32]. Only two participants from engineering have a doctoral degree in their respective field, while three participants from the education department have the same degree. However, 10 of the 11 participants from education have a teaching degree (which is required as they are in the education department), while only five of the 11 participants from engineering indicated this. This is because more emphasis is placed on a field specific qualification in engineering, than on a teaching qualification. Similar research done in 2011 confirmed this by stating that only a small proportion of engineering staff have an official teaching qualification [33].

Figure 2 presents the expectations of the participants that were obtained prior to the start of the workshops (pre-questionnaire) along with the feedback of the participants after the workshop was completed (post-questionnaire). A few engineering academics wanted to know how to set an assessment paper that reflects quality, which was listed by the majority of academics from the education department. A similar number of academics from both fields were interested in the balance that should exist between higher- and lower-order questions for different levels of a qualification. More engineering academics wanted to know what they should assess and how the assessment could be made student friendly. This variation in interest reflects the field discipline of the participants, which must be addressed in the workshop [7]. Only 16 of the original 22 participants completed the post-questionnaire (shown on the right-hand side in Figure 4). The majority (12 + 2 = 14) felt that the workshop was not a waste of time and that other academic staff should attend it (9 + 4 = 13). Recommending the workshop to other staff members indicates that the participants view the content as valuable [34].
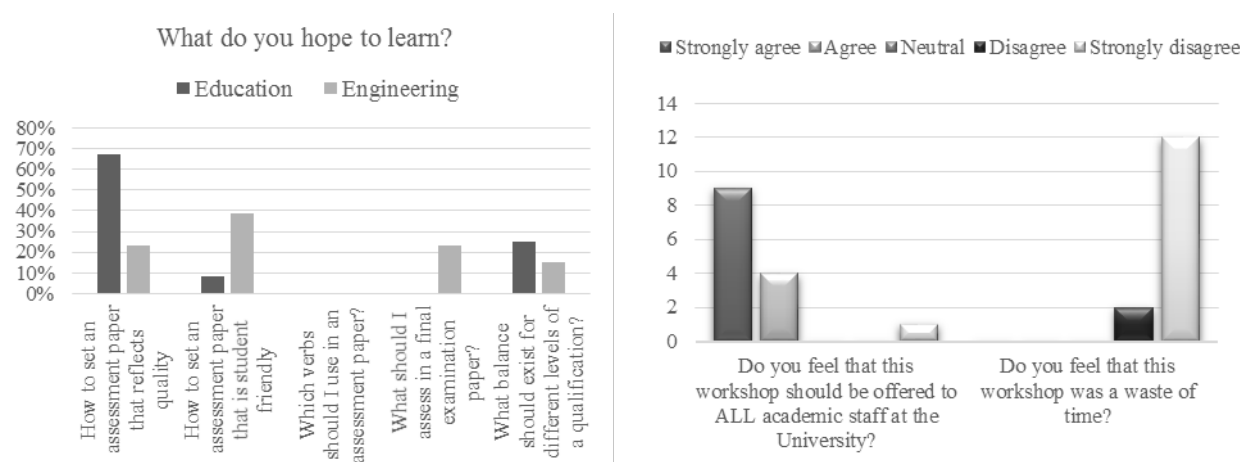

Figure 2: Pre-workshop (left) and post-workshop (right) closed-ended questions.

Figure 3 portrays the result of the 16 respondents to the post-questionnaire on what they enjoyed the most about the workshop. 83% of the respondents indicated that the practical application of the material was great, while 75% revealed that the use of the clickers (ERS) was enjoyable in the workshop. Recall that the main purpose of the workshop was to create awareness of the balance that should exist between higher- and lower-order questions in final assessment papers, which was to be achieved by using educational technology. 20% of the participants originally noted that they wanted to understand this balance (see Figure 2), which was attained because they perceived the material to be of practical value. Further open-ended questions were asked in the post-questionnaire, which are shown next.
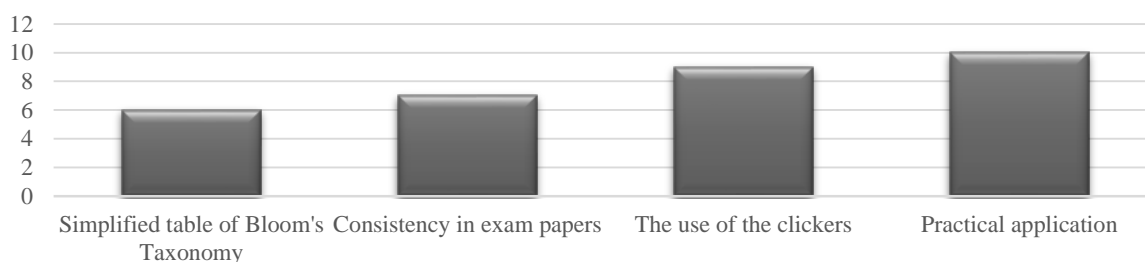

Figure 3: Post-workshop closed-ended question on what was most enjoyable or beneficial.

What practical benefits did you derive from attending this workshop?

Many of the participants mentioned the use of *action verbs*, which may be correlated to the term *illustrative verbs* as used in the workshop. These focus on a limited number of verbs that convey what students should be able to do in an assessment [35], which is also linked to Figure 3 where participants noted the *simplified table of Bloom's taxonomy* as being beneficial. For example, the action verb *sketch* clearly indicates that some or other artwork is required, which is contrary to the verb *understand*, which may not easily be demonstrated by students in an assessment.

What did you learn from the workshop that you wish to implement in your assessments?

The importance of being consistent in setting assessment papers stood out above all the responses. This is also shown in Figure 3, where it was noted as the third most common response. A reputation for exceptional quality requires consistency and continuous improvement over a long period of time [36]. This indicates that consistency is often a mark of quality. The majority of the participants wanted to know how to set an assessment paper that can reflect quality. By consistently using a limited number of action verbs and adhering to a standard structure will bring consistency to the assessment paper, which will reflect a measure of quality.

What verbs are you going to try to use more often in your assessments?

All the engineering academics mentioned the word *calculate*, while those from the education department listed the term *action verbs*. Kreber et al noted that academic development should focus on situational wisdom [8]. It is well reported that mathematical techniques form a major component in many engineering courses that engineering academics must assess [37]. Instead of asking, *What is the amount of current flowing in a circuit?*, these participants may now rephrase the question to state, *Calculate the amount of current flowing in the circuit*. Action is now involved, as physical calculations need to be shown in support of the answer. Academics from the education department are more exposed to Bloom's taxonomy than academics from engineering. Using the simplified table of Bloom's taxonomy with succinct illustrative verbs (as suggested by Swart [35]) has proved more beneficial (and situational) to these participants.

CONCLUSIONS

The main purpose of this article was to highlight the benefits of using an ERS in an academic development workshop to create awareness among academic faculty members of a refreshed approach to the setting of assessments within their own disciplines. A significant contribution made by this study is the answer to the idiom found in the title of this article - *Can you teach an old dog new tricks?* The answer is *Yes*. If academics are invited to attend an academic development workshop, which is informative (practical value made clear) and innovative (using educational technology), change may occur as they can learn some new tricks (new, refreshed or innovative approach to teaching, learning and assessment). The academic development workshops reported on in this study were praised by highly qualified and experienced participants (*an old dog* in terms of the idiom) who recommended that it be presented to other academics at the university. The greatest challenge, which makes it hard for *an old dog* to learn *new tricks*, in this study, is when academics fail to attend workshops that are aimed at capacitating them.

Literature indicates that some academics do not want to attend workshops due to negative attitudes, resistance to change and heavy workloads. This study did not attempt to verify these challenges. However, participants in this study overcame these challenges and attended the academic development workshops that sought to create awareness of a refreshed pedagogical approach by using educational technology. The use of the ERS and the practical application of the material was noted to be very enjoyable and beneficial to the participants. It is, therefore, recommended that a collaborative strategy (academic development workshop using educational technology to convey a pedagogical approach) be adopted by academic developers to try to improve the effectiveness of continual professional development initiatives.

The benefits of using an ERS in an academic development workshop have been highlighted. It may provide a voice to each workshop attendee, thereby providing a satisfying learning experience. It may further contribute to attendees becoming active participants in their own learning, enabling them to feel valued and empowered-important features of agency and ownership. Indeed, a few old dogs were taught a few new tricks using this collaborative strategy.

REFERENCES

1. Ibusuki, M., Japanese law on the internet: its realities and possibilities. *The J, of Infor., Law and Technol.,* 00-1 (2000).
2. Swart, A.J., Student usage of a learning management system at an open distance learning institute - a case study in electrical engineering. *Inter. J. of Electrical Engng. Educ.,* 52, 142-154 (2015).
3. Swart, A.J., Using Web2.0 technology to improve student academic success among senior engineering students - a case study from a telecommunications module! Presented at the *SATNAC 2015*, Arabella Hotel, Hermanus, Western Cape, South Africa (2015).
4. Swart, A.J., Enhancing students' perception of single-sideband suppressed-carrier principles by using cooperative and computer-based learning. *Computer Applications in Engng. Educ.,* 20, 332-338 (2012).
5. McCulloch, A. and Loeser, C., Does research degree supervisor training work? The impact of a professional development induction workshop on supervision practice. *Higher Educ. Research & Develop.,* 35, 968-982 (2016).
6. Zhiting, L., *New Qing History*: an example of *New Imperialist* history. *Contemporary Chinese Thought,* 47, 5-12 (2016).
7. Stensaker, B., van der Vaart, R., Solbrekke, T.D., and Wittek, L., *The Expansion of Academic Development: the Challenges of Organizational Coordination and Collaboration*. In: Stensaker, B., Bilbow, G.T., Breslow, L. and van der Vaart, R. (Eds), Strengthening Teaching and Learning in Research Universities: Strategies and Initiatives for Institutional Change. Cham: Springer International Publishing, 19-41 (2017).

8. Kreber, C., Brook, P. and Policy, E., Impact evaluation of educational development programmes. *Inter. J. for Academic Develop.,* 6, 96-108 (2001).
9. Donnelly, R., Values informing professional practice in academic professional development. *Infonomics Society,* 1, 549-556 (2015).
10. Englund, C. and Englund, C., Exploring approaches to teaching in three-dimensional virtual worlds. *Inter. J. of Infor. and Learning Technol.,* 34, 140-151 (2017).
11. Mirriahi, N. and Alonzo, D., Shedding light on students' technology preferences: implications for academic development. *J. of University Teaching and Learning Practice,* 12, 6 (2015).
12. Brew, A., Transforming academic practice through scholarship. *Inter. J. for Academic Develop.,* 15, 105-116 (2010).
13. Vorster, J. and Quinn, L., *Privileging Knowledge, Creating Knowers: an Analysis of a Formal Programme for University Lecturers.* In: Quinn, L. (Ed), Re-imagining Academic Staff Development: Spaces for Disruption. Stellenbosch: SUN MeDIA, 71-88 (2012).
14. Ndebele, C., Deconstructing the narratives of educational developers on the enabling and constraining conditions in their growth, development and roles as educational staff development facilitators at a South African university. *Inter. J. of Educational Sciences,* 6, 103-115 (2014).
15. Makondo, L. and Makondo, O., The interplay between South African higher education context and academic development. *Anthropologist,* 17, 301-309 (2014).
16. Quinn, L., *Enabling and Constraining Conditions for Academic Staff Development.* In: Quinn, L. (Ed), Re-imagining Academic Staff Development: Spaces for Disruption. Stellenbosch: SUN MeDIA, 27-50 (2012).
17. Chabaya, R.A., Academic Staff Development in Higher Education Institutions: a Case Study of Zimbabwe State Universities. DEd, Curriculum Studies, University of South Africa (2015).
18. Clavert, M. and Laakso, M., Implementing design-based learning in engineering education. Presented at the *41st SEFI Conference*, Leuven, Belgium (2013).
19. Kogan, M., Higher education communities and academic identity. *Higher Educ. Quarterly,* 54, 207-216 (2000).
20. Rowland, S., Overcoming fragmentation in professional life: the challenge for academic development. *Higher Educ. Quarterly,* 56, 52-64 (2002).
21. Quinn, L., Understanding resistance: an analysis of discourses in academic staff development. *Studies in Higher Educ.,* 37, 69-83 (2012).
22. Kasimba, R., Training and development programs in educational institutions: a human factor approach. *J. of Gleanings from Academic Outliers,* 3 (2014).
23. Altbach, P., Higher education and the WTO: Globalization run amok. *Inter. Higher Educ.,* 2-4, (2015).
24. Shapiro, J.P. and Stefkovich, J.A., *Ethical leadership and decision making in education: applying theoretical perspectives to complex dilemmas.* New York: Routledge (2016).
25. Spooner, E., *Interactive Student Centered Learning: a Cooperative Approach to Learning.* Lanham: Rowman & Littlefield (2015).
26. Ryan, M. and Ryan, M., Theorising a model for teaching and assessing reflective learning in higher education. *Higher Educ. Research & Develop.,* 32, 244-257 (2013).
27. Willis, L.-D., *Implications for Pedagogy: Flipping the Classroom to Engage Pre-service Teachers.* In: The Flipped Classroom. Singapore: Springer, 273-287 (2017).
28. Jing, T.W. and Yue, W.S., *Real-Time Assessment with Nearpod in the BYOD Classroom.* In: Assessment for Learning Within and Beyond the Classroom. Singapore: Springer, 103-107 (2016).
29. Oak, S., Medical simulation: a virtual world at your doorstep. *J. of Postgraduate Medicine,* 60, 171 (2014).
30. Swart, A.J., Workshop: higher-order questions versus lower-order questions in the assessment of student learning-the what, why and when? *HELTASA 2008*, Higher Education Learning and Training Association of South Africa, Rhodes University, Grahamstown (2008).
31. Hagenauer, G. and Volet, S.E., *I don't hide my feelings, even though I try to*: insight into teacher educator emotion display. *The Australian Educational Researcher,* 41, 261-281 (2014).
32. Rogers, D. F., Development of Learner-Centered Teaching Styles by Select California Community College Faculty. DEd, Graduate School of Education and Psychology, Pepperdine University (2009).
33. Marriott, J.R., Teesside Tertiary College Inspection Report, 23 April 2001 (2001), 7 October 2018, http://dera.ioe.ac.uk/3797/1/Teeside_Tertiary_College_2001.pdf
34. Swart, A.J., Using problem-based learning to stimulate entrepreneurial awareness among senior African undergraduate students. *Eurasia J. of Mathematics, Science and Technol. Educ.,* 10, 125-134 (2014).
35. Swart, A.J., Evaluation of final examination papers in engineering: a case study using Bloom's taxonomy. *IEEE Trans. on Educ.,* 53, 257-264 (2010).
36. Nustini, Y., Determinants of sustainable competitive advantage due to an it-enabled strategy. *J. Siasat Bisnis,* 11, 2006).
37. Fernandez, C., Vicente, M. and Jimenez, L., Virtual laboratories for control education: a combined methodology. *Inter. J. of Engng. Educ.,* 21, 1059-1067 (2005).