

# The Forms and Functions of Teaching and Learning Innovations on Blackboard: Substantial or Superficial?

Vuyisile Nkonki and Siyanda Ntlabathi

Teaching and Learning Centre, University of Fort Hare, Alice, South Africa

[vnkonki@ufh.ac.za](mailto:vnkonki@ufh.ac.za)

[sntlabathi@ufh.ac.za](mailto:sntlabathi@ufh.ac.za)

**Abstract:** This study is an Information and Computer Technology evaluation of the Blackboard Learning Management System into teaching and learning at an institution of higher education in South Africa. In view of the institution's objective of developing a context-driven, transformative, and innovative teaching and learning practices involving the integration of technology, the study sought to classify and evaluate the form and function of teaching and learning innovations on Blackboard. Using a case study research design and a purposive sampling strategy, lecturers making an extensive use of Blackboard in the delivery of their courses were sampled. Blackboard start-up documents as well as open-ended questionnaires for lecturers provided qualitative data. Content analysis and the extraction of themes were employed. The functional pedagogical framework and SAMR models were used as interpretive lenses for the findings. The study concludes that the nature of Blackboard innovations tended to be more superficial at the levels of substitution and augmentation. Limited transformation evidenced by modification and redefinition spelled lack of substantial changes in curriculum design and delivery. With respect to the functions served by Blackboard, the conclusion drawn is that the integration is to a large extent driven by management and efficiency concerns and less by interaction, collaboration and personalisation functions. The study signals non-realisation of the educational functions spelt in the Blackboard start-up documents. The study recommends a differentiated approach to Blackboard training by a multi-disciplinary team.

**Keywords:** ICT integration, innovation, transformation, Blackboard, Learning Management Systems, transformational learning, pedagogical innovations.

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## 1 Introduction

The rationale for integrating technology into teaching and learning lies in the novelty offered by technology, a belief in its efficiency, and the economic benefits associated with its use (Salmon, 2005). Notwithstanding the above-mentioned positive spin-offs, the focus on technology tools and the affordances and possibilities they bring, often clouds teaching and learning assumptions and consideration of the pedagogies that underlie their use. In this regard, Patten et al (2006) warn against naive optimism in relation to their ability to enhance teaching, foster and drive learning.

This paper aims at emphasising the need for an educational purpose as an overarching aim for using Blackboard, a Learning Management System (LMS), introduced at a higher education institution in South Africa. The study, therefore, sought to examine the pedagogical innovations associated with the use of Blackboard, the forms they take, and the functions they serve. It argues that transformational learning can only be achieved if there are substantive modifications on the teaching, learning and assessment tasks and activities of a module or course to maximise the value of the LMS medium. This point is corroborated by Ho (2000) who asserts that e-learning is about pedagogic innovations rather than technical solutions. The paper typifies some of the changes that lecturers made in their courses as part of design and delivery when using Blackboard, and then looks at the functional value of such changes. It concludes by recommending ways of using Blackboard to achieve transformative learning.

The forms of innovations on a Learning Management System are necessitated by the different needs depending on whether courses are offered on-campus, through distance, and on the content offered (Christie and Garrote-Jurado, 2009). Familiarity of students with the LMS is seen as influencing the tools that are used in online and blended courses. The above cited authors argue against the simply transfer of files onto an LMS without considering the design of the platform or the pedagogical use of its capacity. In a similar vein, Steel and Levy (2009) argue that students' learning styles, lecturers' practices and visions for practice are diverse and complex, and that like students, diversity and complexity also needs to be acknowledged and accommodated in relation to lecturers' beliefs about teaching and learning and the use of LMS environments. Berggren et al (2005) paper on reviewing complexities of integrating learning design concepts, specifications and tools with an LMS concluded that it is important to promote intuitive design environments that are teacher and learner-friendly. These above cited papers substantiate the importance of involving the lecturers

and students when designing online platforms. Govindasamy (2002) also puts forward the view that lecturers need to come forward to express their expectations of e-learning solutions, as their voices would collectively become loud enough to be heard by the e-learning solutions providers.

With respect to the functions served by innovations in an LMS, a substantial portion of the literature argues that mitigating substantive problems of teaching and learning practice, as well as the advancement and maximisation of learning, should be the overarching aims of e-Learning. Dempster et al (2012) distinguish between the management, personal and professional aims of pedagogic innovations. With respect to the management imperative, they list review of existing courses, creating new courses, and the promoting blended learning in large course contexts. For personal and professional aims, they mention learning new teaching skills and engaging students online, which requires re-examining one's own pedagogy, the sharing of practices, and interrogation of principles and practicalities involved (Dempster, et al 2012). In this regard, Vrasidas (2004) highlights issues of pedagogy and design in e-Learning systems as having some implications for design of LMS, which according to him need to be "intuitive and designed so that it supports learning principles and supports the tasks of the online teacher". In view of the above conceptualization of the forms and functions of teaching and learning innovations on Blackboard, e-Learning questions the dominance of the lecturer in favour of more active and meaningful learning activities and tasks.

Contrary to the above-stated purpose of LMS integration, it is argued that the Blackboard platform serves to enhance traditional teaching and learning practices (Malikowski et al, 2007). In line with this view, Blin and Munroe (2007) observed that there is a general tendency to use Moodle, an LMS, for administration, dispensation of resources, and replication of existing practices such as broadcasting feedback. The conclusion by Malikowski et al (2007) is apt when they opine that LMSs promote the enhancement of traditional teaching and learning practices. A similar observation by Nkonki et al (2013) noted congruence between Blackboard's functionalities used, and lecturers' beliefs and preferences, particularly those that relate to the transmission modes of teaching and learning.

McLoughlin and Lee (2010) hold the view that educators and students using Blackboard move towards a social and participatory pedagogy rather than one based on the acquisition of pre-packaged, static facts that are transmitted by the lecturer to the students (Fallery and Rodhain, 2011). McLoughlin and Lee (2010) posit that there is need for pedagogies that are personal, social and participatory. In line with the transactional models of learning, these authors also hold that learners as active participants and co-producers of learning resources. Thus, innovations on e-learning platforms should be used to foster conversational models of learning which accentuate the development of autonomous learners through guided discovery and scaffolding, whilst enabling feedback and exchange, and fostering interaction and self-regulation (Mayers and de Freitas, 2004). In this regard, the Blackboard platform affords online discussion groups, simulations, discovery tasks, multimedia lessons tutorials, assignments, research projects, quizzes, and digital content.

The transformative learning potential of Blackboard, which the institution from which this research is conducted seeks to achieve, depends on the fundamental reconceptualization and reorganisation of the teaching and learning dynamic, starting with various specific contextual needs and contingencies (Garrison and Kanuka, 2004). The design of teaching and learning activities that incorporate technology should foster interaction and engagement in a community of inquiry and learning. Engagement in transformative learning involves free and open dialogue; critical debate; negotiation and agreement; reflective element; multiple forms of communication in a community of learning inquiry (Garrison and Kanuka, 2004). The result is the development of learning relationships, identities, social practices of inquiry and learning, disciplinary practices, collaborative learning outcomes, and authentic practices (Mayers and de Freitas, 2004). In view of the transformative learning tenets, Ho (2000) argues that it is the achievement of higher levels of learning, that is, critical and reflective thinking, which should be the ultimate aim of LMS innovations.

Salmon (2005) identifies two stages through which the introduction of e-Learning has moved. The first stage is where e-learning technologies are seen as a new way of doing familiar and traditional things. Here, pedagogical approaches and the underlying assumptions about teaching and learning are unchanged but enhanced by the introduction of learning technologies. This could be seen as transference of existing pedagogy. The second stage, involves the use of learning technologies in new ways that involves paradigm shift in the conceptualisation of both the practice and the pedagogy of teaching and learning. This is said to constitute radical pedagogical change which the institution from which this research is conducted aspires to achieve.

Rather than first thinking about which technologies to introduce into teaching and learning, Dempster et al (2012) posit that teaching and learning innovations should be preceded by (1) self-awareness of one's own conceptions and practices, (2) confrontation with the inadequacies of one's own theories and practices, (3) exposure to better, alternative conceptions, and (4) commitment to building and consolidating changed practices. They therefore, suggest starting teaching and learning innovations with individual lecturers during course design at the programme level. Individual lecturers in the departments, therefore, become the locus of developing pedagogic innovations with e-Learning tools.

Teacher resistance to curriculum redesign and redevelopment that involves the integration of technology is, in part, explained by teachers' established conceptions of learning and teaching. Hence, Ho (2000) suggests the creation of a safe platform for challenging curriculum assumptions. This platform would also foster self-awareness, confront and expose lecturers to better and alternative conceptions of teaching and learning. In addition, an institutional culture that acknowledges, recognises and legitimises innovations should help break the cycle of established teaching conceptions and practices. Ho (2000) also argues that multiple teams and interdisciplinary teams that share practices, foster creativity and innovation in curriculum development.

The point on curriculum development being the focus in the integration of technology, and the need for an interdisciplinary team, is further emphasised by Kaczynski and Kelly (2004) who assert that "*curriculum development efforts must become increasingly attentive to the rapidly evolving relationship of software program integration with course content*". They argue that prior to course delivery, students as contributors, learning content and technology should be addressed so that a rich learning experience is realised.

In view of the above ideas on e-Learning innovations, this study was conducted in order to address the following research questions:

- What forms do pedagogical innovations in Blackboard take?
- What teaching and learning functions are served by pedagogical innovations in Blackboard?

The following section describes the theoretical frameworks that were used to analyse Blackboard start-up documents, that is, the Blackboard Planning and Course Request Forms, as a way of interrogating the lecturers' intentions around the nature and functions of teaching and learning innovations.

## 2 Theoretical framework

The Puentedura (2009) Substitution, Augmentation, Modification, and Redefinition (SAMR) model was used to analyse and categorise the nature and form of pedagogic innovations in Blackboard. Patten et al's (2006) functional pedagogical framework informed the study of the various functions served by the forms of teaching and learning innovations in Blackboard.

### 2.1 The SAMR model

Though the model has been used to assess the pedagogic functions served by handheld devices such as tablet (van Oostveen et al, 2011), the framework is yet to be used for the classification of the pedagogic functions of Blackboard.

The enhancement functions of the model include substitution and augmentation. With *substitution*, technology acts as a direct tool, a substitute, with no functional change in the teaching and learning practices. Technology in this instance is used to do the same things the lecturer did without it. With *augmentation*, technology acts as a direct tool, a substitute with functional improvements in the teaching and learning practices. Though the same things are done with technology but there are however, minor improvements (Fabian and MacLean, 2014).

The transformation functions of the model include modification and redefinition. *Modification* allows for significant task redesign which makes it possible for new products to be created, and improvement in efficiency achieved. With *redefinition*, technology allows for the creation of new tasks which were previously inconceivable, a remix and redesign process, a total transformation of one's practice (Fabian and MacLean, 2014). Van Oostveen et al (2011) found that there was a general tendency to substitute traditional learning tools such as pen and paper, with tablet personal computers. The authors argue that a great deal needs to change with respect to the understanding of the pedagogical and epistemological conceptions of lectures, if meaningful learning is to be achieved. A similar observation was made by Herrington et al (2009) who view the current use of e-Learning tools in higher education as pedagogically conservative and regressive.

## **2.2 The functional pedagogical framework**

This framework categorises applications in terms of their pedagogical functions. Patten et al (2006) list these categories of functions as *administration, reference, interactive, micro world, data collection, location aware, and collaboration*. These authors argue that most applications tend to replicate or augment the existing learning practices. These applications enable access to content, but tend to replicate traditional applications in terms of the instructional philosophy. The administration and reference functions mentioned above serve convenience in communication. The interactive, micro world, data collection, location aware, and collaboration are associated with the educational philosophies of collaboration, contextualisation, and constructivism. Though the framework has been used to assess pedagogic functions served by handheld devices, but is yet to be used for the classification of the pedagogical functions of an LMS like Blackboard. This particular study chose to infer pedagogical functions from the intentions of lecturers in the Blackboard Planning and Course Request Forms.

## **3 Research methodology**

### **3.1 Research design**

The study made use of a descriptive case study design (Cohen et al, 2007). In this particular study, case studies provided narrative accounts which describe lecturers' intentions with the use of Blackboard. Cases studies allow for both qualitative and quantitative analysis of data. Case studies are strong in the portrayal of reality and evaluation of actions with a view to pointing action steps. Insights offered by case studies have a direct bearing on the formative development of staff and individuals. The choice of a case study design is particularly relevant in the context of the site where this research is conducted since the transformation of teaching and learning practices is envisaged with the use of Blackboard.

### **3.2 Sampling**

Sampling was purposive which implies that cases were hand-picked on the basis of their typicality and richness of information, with the intention that they would help fulfil a particular need. Thirty-one (31) out of sixty (60) Blackboard Planning and Course Request Forms constituted the cases of this particular research. These documents were easy to access because of their central location with the administrator of Blackboard. This saved the researchers both costs and time. In addition, lecturers who use Blackboard extensively, as reflected in the reports, were asked to respond to an open-ended questionnaire. Five (5) of the lecturers acceded to the request to participate in the study.

### **3.3 Data collection**

Data were obtained from documents and records, as described above. In particular, the study made use of lecturers' responses on the current teaching context, the rationale for the use of Blackboard. The section on the *context* asks lecturers to furnish information on the teaching and learning challenges identified in their contexts. The *rationale* section solicits information on the purpose for which lecturers specifically want to use Blackboard, for example, resource deployment, communication, assessment, interactive student engagement, course management, et cetera. The form also asks what lecturers think would be the value of using technology to assuage the teaching and learning challenges described in the context section. In addition, the researchers used open-ended questions to gather data on (1) the changes/adjustments in the curriculum (both design and delivery) that have been necessitated by the introduction of Blackboard in their courses/modules, (2) the educational functions/outcomes (in terms of knowledge, skills, and competencies) that are served by the introduction of Blackboard in their courses/modules, (3) the intentions/purposes (as articulated in the Blackboard Planning and Course request forms) that were realized with the integration of Blackboard; (4) the constraints/impediments to the intentions/purposes that were not realized.

### **3.4 Data analysis**

Content Analysis was employed for the purposes of making sense of the data. Cohen et al (2007:197) describes content analysis as involving a process whereby the "content of communication serves as a basis of inference, from word counts to categorisation", and is used in the analysis of educational documents. Data from the documents were first analysed qualitatively and then later further analysed quantitatively. Textual data analysis involved the extraction of words with similar meanings from verbatim responses, and the coding of these into concept types or themes (OLRAC SPS, 2015). Codes were summarised into categories suggested by the SAMR theoretical model. Category frequency was then computed to decipher the forms of innovations, as

well the functions served by pedagogic innovations on Blackboard. Data from open-ended questionnaires generated a transcript which was analysed thematically. The questions formed themes with the many meaning units such as words and phrases forming codes. These codes were classified and aggregated into fewer content categories suggested by the theoretical frameworks used in this particular study (Struwig and Stead, 2013). The narratives presented show the variety of manifestations of the forms and functions of pedagogic innovations on Blackboard.

## 4 Findings

### 4.1 Forms of pedagogic innovations in Blackboard

With respect to the forms of innovations, the data collected revealed the following results which are discussed under the following categories of the SAMR model:

*Substitution:* It is evident from the data that the tool was just a substitute for the old way of doing things. For example, instead of printing materials, the lecturers indicated that they would put materials online for students to access. This practice does not seem to change the norm or depart from teaching practices that do not involve Blackboard. The following excerpts suggest no functional changes in the teaching and learning methods and tasks. For example, the intention expressed in the following phrases suggests that *“It would make it easy for students to access course content”*. This suggests that students can have access to their materials anytime, anywhere. If they had printed materials but then lose their copies, they can go and access them from Blackboard again. Two similar excerpts elaborate this finding regarding lecturers’ views of the function of Blackboard: *“Ensure that students receive the learning material and information that they need”* and *“Students will download notes and slides from Blackboard”*.

These lecturers see the tool as enabling access to learning materials, and possibly curtailing office visits by students requesting materials. The lecturers also indicated that *“The Blackboard tool reduced costs of printing”* and that *“They [students] will print course outlines and other teaching materials directly from blackboard”*. This was a cost reduction exercise on the side of the lecturer, but the cost is now shifted to the students when asked to print materials on their own. Other lecturers indicated that the tool enabled them make announcements and post due dates for assessments. One of the participants remarked that *“They will also be able to read any announcements I place on Bb for their attention.”* The other students commented that *“They will also see the due dates for formative and summative assessment of their portfolios.”* All of the above excerpts indicate a change from a handout method of disseminating information to using an online tool. This indicates mere substitution.

*Augmentation:* With augmentation there is functional improvement in how the tool is used. The majority of the lecturers used the tool with little improvements effected. Several excerpts showcase a change in the use of the Blackboard tool: *“They will be able to engage interactively with the learning content through Blackboard.”* Here there is an assumption that when student access the material, they will be able to interact with the content. Similarly, the view that *“It will give them an opportunity to have access to more reading materials and improve the level of communication”* is indicative of the assumption that Blackboard will translate into transformative educational practices. Although giving students reading material does improve their level of communication skills, putting more reading materials online does not necessarily translate to students’ interaction and engagement with the materials. In addition, there should be measures in place to test that the students are reading these materials. For example, giving students the task of summarising the text and sending it to the lecturer is an example of testing that they are reading. There were no measures evident in the lecturers’ responses that show that students were truly engaged with the materials.

*Modification:* Modification implies the redesign of materials and tasks to accommodate Blackboard and to improve efficiency. Two aspects from the data that call for the redesign of materials and tasks included *“...developing critical thought in students, assisting students to complete challenging tutorials, becoming aware of what plagiarism is...”* This is a broad response and encompasses quite a number of changes on how the lecturer approaches the course. If Blackboard enabled all of the above, then one assumes that there were changes in the tasks and methods of engaging students. Redesign of materials to accommodate the LMS might be evident in its being used to complete challenging tutorials and in submitting reports on time. The fact that the tool enabled students to understand plagiarism speaks to its enabling writing development. Other excerpts that speak to redesign are, *“They will be able to enter discussion platforms, exchange views and opinions and respond to peers too.”* A departure from a face-to-face discussion to an online discussion needs a completely

different conceptualisation of teaching and learning, both in form and function. This therefore, entails a total redesign of the task, and of the way in which students respond to each other and the lecturer in the discussion forum. The discussion forum tasks are a good way of illustrating changes in the design process of an online discussion forum. The discussion forum tasks are a good way of illustrating modification, which is located at the transformational level of the SAMR model. In this instance, the lecturer attempted to move to a more advanced level of technology usage in the classroom.

*Redefinition*: Redefinition allows for the creation of new tasks and materials. It allows for reconceptualisation of the whole course. The data, however, did not provide evidence of changes that would be effected at this level of aligning teaching and learning practices with the potential of Blackboard. With the redefinition level, most, if not all the lecturers had not reached this transformation level in their design of tasks and methods of teaching and learning.

The results of the analysis of the open-ended questions suggest that no substantial changes/adjustments were made and effected by lecturers on their curricula, at both the levels of the design and delivery of the curriculum and lesson units. One of the lecturers remarked that *“none really. I use it for notes. I sometimes use it for tests”*. Where changes/adjustments are claimed to have been made, these are superficial adjustments on the learning guides. These include updates on dates for submission, lecture and consultation times, venues and contact persons. The following sentiment expressed by one of the lecturers pointed out that *“The learning guides would be followed year after year for any changes or adjustments, as they would be available on Blackboard”*.

#### 4.2 Functions of pedagogic innovations

Table 1 below shows frequencies and the rank-order of emerging themes, and their sub-themes, regarding the pedagogic functions served by the integration of Blackboard into teaching and learning: engagement (22%), convenience (81%), efficiency (26%), collaboration (9.67%), management (16.12%), developmental (12.90%), and personalisation (3.2%).

**Table 1:** Quantitative analysis of themes

Themes	Sub-themes	f	%
<b>Convenience</b>	Access to materials; Communication: clarity and effectiveness	25	81
<b>Efficiency</b>	Assessment: Minimal time & labour; Economy in resource utilisation	8	26
<b>Engagement</b>	Interaction (tasks)	7	22
<b>Management</b>	Repository of materials and resources; Management of submissions; queries	5	16
<b>Developmental</b>	Critical thinking; academic literacy; writing development; avoidance of plagiarism; support with challenging materials	4	13
<b>Collaboration</b>	Interaction and exchange of ideas	3	10
<b>Personalisation</b>	Uniqueness and customisation	1	3

The *engagement* theme included excerpts that suggested the use of Blackboard to foster interaction with ideas, materials and learning resources. The sub-themes pertaining to *convenience* which emerged from the data included access to materials, and the need to achieve ease, clarity and effectiveness in the lecturers’ communication with students. For the *efficiency* theme, the need to save on time and labour expended on assessment tasks was expressed. The *efficiency* theme also involved management of resources. *Collaboration* was characterised by lecturers’ reference to the desire to get students to interact and exchange ideas. The *developmental* function was deduced from phrases and sentences that made reference to critical thinking, academic literacy, writing development, and the avoidance of plagiarism. Phrases that alluded to academic

support for challenging materials were also allotted onto this theme. The *personalisation* function was expressed by the lecturers' intentions to use features of Blackboard that allow for uniqueness, customisation of materials and resources, as well as a personal feel in the delivery of course.

The responses to the open-ended questions revealed that the following educational functions/outcomes were served by the introduction of Blackboard, namely: improved communication, follow-up on students' progress, diagnosis and identification of students at risk, support, confirmation of learning, revision, additional learning, application of theory, exposure to a wide range of learning experiences and opportunities, access to notes, reasoning skills, computer skills, and online practice on the assessment exercises.

Some of the participants report that the intentions/purposes in the Blackboard Planning and Course Request forms were not realized. In this regard one of the lecturers opined that "*realistically nothing...*" was realized. One of the explanations for this non-realisation of educational outcomes included "*students' reluctance to set aside time for Blackboard*". Another view expressed cited complaints on the part of the lecturers who fail to work on Blackboard. The nature and contents of these complaints were however not elaborated on by the research participant.

## 5 Discussion

With respect to curriculum changes, the findings suggest that the focus on technology serves to benefit the convenience, management, administration and efficiency in the transmission mode, with limited success in the transactional, and almost no success with transformational learning. Though literature suggests improvements in efficiency as a function of modification in teaching and learning tasks and methods (Fabian and McLean, 2014), the findings of this particular study revealed the achievement of efficiency with substitutions and augmentations. These findings confirm Herrington, et al's (2009) observation that the use of technology devices in higher education has tended to be conservative and regressive, characterised by mere substitution of pen and paper by computers, laptops and other gadgets, with limited usage of the affordances that most teaching and learning software provides. The results of this research suggest, as do van Oostveen et al (2011), that transformational learning is not achieved if the focus is on the technological changes than on pedagogical changes. The few superficial adjustments on the Learning Guides claimed by some lecturers and the almost non-existence of substantial changes in both the design and delivery of the curriculum amounts to non-existence of pedagogical innovations in the usage of Blackboard which Christie and Garrote-Jurado (2009) advance in their argument for more pedagogical uses of a Learning Management System.

The Blackboard functions that serve interactive, constructivist, contextualisation, constructionist and collaborative learning, seem not to be focus of the current cohort of lecturers using Blackboard. This is asserted because the findings suggest convenience, management, and efficiency as the drivers of lecturers' motivations to use Blackboard. These findings confirm Patten et al (2006) observations that administration, reference, convenience and communication tend to be the most served functions in the integration of technology into teaching and learning. It would seem that lecturers' intentions to achieve collaboration, engagement, interaction, and transformation of texts are not matched by adjustments in the curriculum activities. These activities cannot be achieved through Blackboard without substantially reconfiguring the entire curriculum. The findings on the challenges with students' reluctance to set aside time for Blackboard, superficial changes on the Learning Guides, and the non-realisation of the educational intents and purposes of Blackboard integration could be explained by the lack of alignment between the technology application, course contents, students and lecturers' expectation and experiences. In this regard, Kaczynski and Kelly (2004) argue that a rich learning experience is achieved when there is an integration and a symbiotic relationship between a software programme, course content, and the contributions of students and lecturers.

## 6 Conclusion

It is evident that lecturers are using Blackboard in different ways for different reasons. The tool is used for enhancement purposes, but not at an advanced level that requires transformation of teaching and learning methods and tasks. In this study, analysis showed that none of the lecturers had advanced to the redefinition level of transformation as described in the SAMR framework. The above findings suggest that lecturers did not think through the necessary changes in their teaching and learning methods and tasks when integrating Blackboard. It would seem that the adjustment forms taken by most courses which integrated Blackboard are substitution and augmentation. Little wonder that a non-transformative use of Blackboard and the non-existence of pedagogical innovations is observed. The interaction, collaboration and personalisation concerns

do not seem to have been given thorough thought. One therefore concludes that the connection between purpose (function) and form (nature) were not well processed when Blackboard Planning and Course Request forms were completed. Thus, the educational function of integrating Blackboard was shifted to the background by most lecturers with convenience, management and efficiency concerns taking the centre stage. Therefore, educative purposeful functions could not be achieved because the integration of Blackboard was left to individual lecturers with little or no regard for the confluence of students, lecturers, educational developers, curriculum advisors, and technicians' inputs.

## 7 Recommendations

In view of the above findings and conclusions, the study submits that a lot of development and support still needs to be given to lecturers in order that they reach advanced levels in the use of Learning Management Systems. There is, therefore, a need for differentiation in the manner in which Blackboard training for lecturers is organised and delivered. Thus, basic, intermediate and advanced training manuals need to be developed. These manuals should be a blend of pedagogic and technological innovations for achieving certain educational outcomes. Attempts should be made by Blackboard trainers and academic development practitioners to get the lecturers to align their teaching and learning methods and tasks so that they are appropriate for the educational purposes sought. A multi-disciplinary team that includes Blackboard trainers, technologists, curriculum specialists, students and education developers should be constituted so that the integration of Blackboard into teaching and learning is informed by curriculum principles of active, engaging, collaborative, meaningful and transformational learning.

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