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USING CYBER PEDAGOGY (WIBEKI/01/2014) MODEL TO INITIATE MULTILITERACIES AND PROMOTE A VIRTUAL CLASSROOM: A PILOT STUDY

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ABSTRACT

In the survey conducted at Botho University, researchers established that more than 90% of the students have access to the ICT technologies and 80% own the ICT gadgets. However, there is a challenge faced by learners when it comes to the interpretation of digitized instructions presented on these media or the internet utilized every day. On this background, this paper suggests WIBEKI/01/2014 model which contends for “cyber pedagogy” and “multiliteracies” for the learners at Higher Institutions of learning. Drawing on theories of virtual classrooms, peer and self assessment, this paper further explores two strategies; (a) the WIBEKI/01/2014 virtual classroom and (b) the mark distribution algorithm (MDF). These strategies were piloted amongst the 2 batches of the Postgraduate Certificate in Higher Education (PGCHE) (block release and part time) classes at Botho University (N=23). The WIBEKI/01/2014 is an integrated model and therefore in this study we argue that it is absolutely immaterial for learners to be constrained within a physical classroom setup. Instead, students require metacognitive skills in order to use collaborative tools, interact online and associate with team members. The findings of the study revealed that well-rounded cyber pedagogies must integrate five fundamental processes; (a) the preparatory learning for the cyber-student, (b) cyber-instructor’s training process, (c) the virtual learning process itself (d) effective assessment strategies and (e) the virtual classroom evaluation procedures.

KEYWORDS
cyber-pedagogy, mark distribution model, multiliteracies, WIBEKI/01/2014 model.

INTRODUCTION

Educational technologies are certainly a paradigm that can promote active learning. Introducing classes with a range of exciting techno-teaching strategies where students use social media, communication devices and animation can transform a classroom into a vibrant learning environment. In the study by Huxham (2005), sufficient evidence is specified pointing to a correlation between engagement and students’ performance in recall and retention. Although in this study there is no extensive application of educational technology, the stimuli used is technology in a small way. In the pursuit for new forms of educational technologies, we need to ask how instructional technologies are transforming teaching and learning in higher education (Jaffee, 2003). The present study therefore proposes cyber-pedagogies that allow for flexibility in the teaching, learning and assessment processes. The presence of the ICT gadgets is fast transforming the way teachers and students interact and hence the dimension of thinking has amongst them. This observation is supported in the study of the shift in the pedagogical ecology from the physical to the virtual classroom by Jaffee (2003). The study shows that the use of mobile devices and browsing can transform humans’ frame of mind and change the way they understand and manipulate their environment (Jaffee, 2003). Kellner (1998) concurs with these findings. The researchers therefore posit for a critical pedagogy that aligns the teaching/learning approaches with the modern learning processes required by the modern learners.

Studies conducted more than a decade ago proved that traditional methods where students are confined in some physical space do not stimulate learners’ thoughts or attitudes (Bligh, 1998). Gibbs and Habeshaw (1992) discovered that lecture methods are boring to students and more often lead to somnolence. Furthermore, a worse scenario was proven by Maloney and Lally (1998). In their study of the “...relationship between students’ attendance at Universities lectures and academic performance...”, they revealed that students deliberately avoid lectures or cannot cope to the end of the semester if they are not spiced with interesting interventions. (Maloney & Lally, 1998). In the current study, researchers design a cyber-pedagogy model that creates a learning, teaching and assessment environment supporting the dynamic use of mobile devices and the internet. The model is expected to promote virtual learning where students are free to make a choice of where to access digitized instructional materials. As a result students can learn at home or within premises (but not necessarily in class) without prejudice. In the following sections we discuss the motivational issues and the need for action at Botho University, review the existing body of literature on related cyber-pedagogy and their use in the learning teaching and assessment. This will be followed by the piloted methodology, recorded results and finally, a discussion of these results and conclusion.

REVIEW OF RELATED LITERATURE

High statistics on ICT usage (in the classrooms and home) point to the need for the teachers and researchers to uplift the present traditional teaching strategies in higher education to suit the students’ learning preferences. This can be done by introducing cyber-strategies that equip students with abilities to think
critically in order to understand digitised instructions. The digitised instructions are dominant on the ICT media and therefore modern pedagogies need to be upgraded to fit in the techno-society. In these societies, learners need to think critically in order to meet the employers’ expectations (Robertson, 2011). Furthermore, there is need to consider a virtual classroom environment where the teacher is not limited to chalk and talk (Hartse, 2003). Teachers do not need to restrict the learners within a classroom and assume that learning is taking place. Research has it that the majority of students do not benefit from being present in the classroom and listening to the teacher. Caldwell (2007) supports the view by associating a lecture in the classroom with a transmission model of communication and not learning, in which the transmission of information process is in the teacher-to-students direction. Similarly, Huxham (2005), argues that lectures are unpopular with students, especially those at higher education. At this point, we can pose a question; how best can the learners use their smart phones for learning purposes given that the instructions presented to them is in a complex multimodal format? Koh (2001), states that the graphics texts presented on the ICT gadgets are a mix of blended textual forms of linguistic codes, sound and visual semiotics with sophisticated designs of pictures and animation. Furthermore, Rosenberg (2010) established that the nature of digital instructions (print text, images, sound and icons and motion) presented on the communications media (ipads, internet, chats, television, etc.) are not only difficult for users to decipher but, also aim at placing the user in a passive position where the victims get conditioned by it. Learners therefore must be taught to think critically in order to be on the driver’s seat of the interactive experience and immune to screening. Learners need to acquire metacognitive skills required for critical thinking (Alverman, Moon, & Hagood, 1999; Bruce, 1998; Buckingham, 1998; Buckingham & Sefton-Green, 1994; Gee, 2000; Pailliotet & Mosenthal, 2000; Reinking, McKenna, Labbo, & Kieffer, 1998; Semali, 1999; Watts Pailliotet & Mosenthal, 2000).

John Seely Brown (2000) proposed an “action and knowledge creation” learning model. This is web-based transformative learning. The model can be visualised as a cyclic nomenclature where four learning processes are apparent; (a) the non-text based navigational learning, (b) experience and discovery based learning, (c) “bricologe” and (d) action-oriented learning. The non-text based information navigation involves navigating through web-based resources, locating useful knowledge and information. Once navigational skills are set, the learners begin to build on experience and discovering (“discovery-based learning”). As the learners get familiar with web navigational skills and successfully find information they require, they now get curious and want to try new things. At that stage, they may link, lurk and try to assemble tasks in order to create something new and important to their lives – we refer to such skills as “bricologe” (Brown, 2000). The bricologe is actively involved in harnessing digitised information (hyper-text links, e-books, electronic journals, etc) and constructing meaning from the information pieces to make learning social, cognitive, action-oriented, and concrete.

Kalantzis and Cope (2008) presented the meaning-making process model that supports the development of multimodal skills amongst learners. The framework proposes multiliteracies to equip cyber-learners with metacognitive skills. In the era of smart communications technologies, meaning-making is polymorphic where written language form links with animation, gestures and spatial patterns of meaning (Kalantzis & Cope, 2008). Notably, the meaning-making model is similar to the non-text based navigational learning; action-oriented, and concrete. Kalantzis and Cope (2008) in the setup, the teachers’ role is to facilitate the learning process and not to direct it. Learners ask questions online, exchange information and participate in specific forums at the time they are willing and ready. In such a cyber-space there is no face-to-face interaction but, learning can be achieved more effectively because students manage their learning. Wiki in the Hawaiian accent (wiki-wiki) means quick or fast. In the context of IT, wikis are web 2.0 communication and collaboration tools that facilitate learners’ engagement and collaboration (Konieczny, 2007); (Parker & Chao, 2007). Wikis enable users to develop and publish web content, monitor the content change over time, and make corrections or revert to the original content if there is need to do so. Effective application of wikis in collaborative learning points to a new paradigm in pedagogical ecology. According to Jaffee (2003), a critical aspect of web-based learning (wikis, blogs, etc) is the shift in the pedagogical ecology from the physical to the virtual classroom.

A virtual classroom (VC) is an online learning environment that provides digitised instructional materials, collaboration and interaction using asynchronous and synchronous mechanisms (Subramaniam & Kandasamy, 2011); (Michael, 2012). The definition suggests that VCs create two forms of online learning environment; (a) asynchronous-based and (b) a synchronized form. According to Subramaniam and Kandasamy (2011), asynchronous-based environment supports a community where students receive online course materials, collaborate and interact easily. In that sense the virtual classroom reduces the significance of physical presence in a classroom and discourages surface learning (Subramaniam & Kandasamy, 2011); (Schullo, et al., 2007). Synchronized environment complements collaboration since exchange of information is real-time and full-duplex so learners can obtain instant feedback from the community members as they work on a concept. Full-duplex means two-way exchange of videos and audio content amongst learners. In the synchronized mode learners are chatting, seeing each other face-to-face and expressing their emotions to colleagues. That way, the physical classroom environment is simulated. To develop virtual classrooms, we need to harness the present features of the internet. Bower (2007) lists a dozen of these features including; screen sharing, Webcam, VoIP, text Chat, Whiteboard, file upload/download to mention but a few.

IMPORTANT OF THE STUDY

The main premise of the present study is to design and pilot a WIBEKI/01/2014 cyber-pedagogy and the mark distribution models which are meant to optimize the teaching, learning and assessment processes. The WIBEKI/01/2014 is a customised virtual classroom setup created on botho.blackboard.com platform. It focuses on students’ multiliteracies, instructors’ training requirements and formative and summative evaluation of the virtual classrooms. In this research, we intend to offer some guidance to the educators on how to customise existing open source/licensed applications into personal virtual classroom applications. The other innovation on the WIBEKI/01/2014 is the mark distribution algorithm used by cyber-learners and instructors during the assessment process. The algorithm allows learners to conduct self/peer assessment to evaluate the process of group activities and the instructor to use the well-designed rubric to assess the product of group activities. This framework therefore creates an assessment process where the final student mark combines the cyber-learner’s academic achievement and team work capabilities.

STATEMENT OF THE PROBLEM

A survey conducted at Botho University in 2014 (Semester 1) amongst eighty one (81) students, established that a significant number of learners use ICT gadgets for interacting amongst themselves and their instructors. The digitized instructions presented on the ICT gadgets they use are multimodal (mixture of text, graphs, audio and animation) and are difficult to understand due to their multimodality. Several solutions have been framed to combat such problems, perhaps the most popular one being critical cognitive skills amongst learners (to minimise conditioning of the user) and the virtual learning environment (to extend the classroom hours). The present research proposes critical multiliteracies for cyber-learners, the virtual learning platform and the mark distribution model for effective learning, teaching and transparent assessment of learners’ work.

OBJECTIVES OF THE STUDY

The objectives of the present study include the:

• Review related literature in order to establish the current virtual platforms and collaboration tools on the virtual classrooms,
• Design the WIBEKI/01/2014 framework and apply the WIBEKI/01/2014 platform to simulate the virtual classroom model,
• Application of the mark distribution algorithm(MDA) to the group work assessment process,
• Evaluation of the effects of the above mentioned models regarding their relevance in supporting learning, teaching and assessment.

HYPOTHESES

The proposed virtual learning platform and self/peer assessment algorithm are expected to improve student-student and student-teacher collaboration and transform assessment into a very transparent assessment system. For this purpose, we formulate the following hypothesis:
RESEARCH METHODOLOGY

A. PARTICIPANTS

CATEGORY 1 PARTICIPANTS

These participants were involved in the pre-test analysis of ICT usage amongst Botho University students (Francistown). The sampling was random and 81 students volunteered with the information. In the sample, 42(51.85%) students are female and 39(48.15%) are male.

CATEGORY 2 PARTICIPANTS

To test the usability and effectiveness of the WIBEKI/01/2014 virtual learning, 2 Post Graduate Certificate in Higher Education (PGCHE) classes were used. The first class is part time with 10 students. The part time group consisted of 1 male student teacher and 6 female student teachers. The student teachers were teaching in various schools in the Northern region of Botswana during the time of the study. The second PGCHE group is on block-release study mode. It consisted of 13 PGCHE students all of which are lecturers at Botho University in Francistown. In total there were 20 category 2 participants, 10(50%) are male and 10(50%) are female.

B. RESEARCH METHOD, DATA COLLECTION AND DATA CODING

ICT GADGETS USAGE STUDENT QUESTIONNAIRE

To initiate the present research, researchers sort to establish the extent of ICT usage gadget at Botho University by students. The ICT gadgets usage questionnaires were distributed amongst 81 learners at Botho University (Francistown campus) using random sampling. The survey sought to establish four key aspects; (a) how many learners own smart phones or a computer, (b) how easy learners got access to the internet, (c) how easily available are the social media to the students and (d) how the learners learnt to use the media or the internet.

WIBEKI/01/2014 SURVEY QUESTIONNAIRE

This questionnaire sought to get the participants’ views on collaborative tools (wikis and discussion forums) provided in WIBEKI/01/2014 during assignment 3. Particularly, how these technologies facilitated collaboration, interaction, peer assessment and self assessment. Additionally, how these tools provided learning support to the participants. The researchers sought to establish if the participants engaged high mental activities such as application of concepts and synthesis, their perceptions of self and peer assessment and the benefits realized from the use of collaborative tools.

RESEARCH METHOD AND DATA COLLECTION

The analytical approach adopted in this study is pilot study. This study is traditionally known for its effectiveness in facilitating informed decisions on the reliability and applicability of new innovations such the educational management systems before they are tried on a larger scale. Although virtual classrooms are not new, in this study we chose to pilot the WIBEKI/01/2014 to ascertain its acceptability, effectiveness and its likely impact as a new tool of complementing the learning/teaching at Botho University. The sample size is relatively small and therefore we chose to use the feedback to improve the WIBEKI/01/2014 product. Baker (1994), acknowledged that a sample size of 10%-20% is ideal for conducting a successful pilot study. Furthermore, in this study three methods of data collection were used. Two questionnaires were distributed amongst the students; the first questionnaire was distributed at the beginning of the study to survey ICT gadgets usage amongst students, and the second questionnaire was distributed at the end of the collaborative activity to survey students’ satisfaction with the virtual teaching-learning experience. Secondly, the WIBEKI model and Likert scale questions were reviewed by five experts to collect feedback on the completeness, content validity and relevance of the model and questions. The third method involved face-to-face follow-up interviews with nine students that were randomly selected from the two groups of the PGCHE students. Six students were selected from the part time class and three from the Block Release class. Each semi-structured interview lasted ten minutes. The interview questions were developed based on the questions from the WIBEKI/01/2014 usage questions.

DESIGN

THE VIRTUAL CLASSROOM FRAMEWORK

The WIBEKI/01/2014 framework consists of four(4) major components for implementing the cyber-learning environment; (a) the virtual learning environment model in the midst of the diagram, (b) the cyber-student preparatory-reading requirements, (c) the instructors’ learning requirements to enable them to design customised cyber-learning environments and finally, (d) the pedagogical evaluation model, which is a model guiding the cyber-users on which evaluation processes could be conducted during the use of these virtual learning tools and also the evaluation of the impact of the virtual classroom on learning/teaching.

FIGURE 1: THE WIBEKI/01/2014 FRAMEWORK FOR INITIATING MULTILITERACIES AND SUPPORTING VIRTUAL CLASSROOM
The cyber-instructor must be prepared to develop, use and evaluate the virtual classroom being used to support the cyber learning processes. The taxonomy considered relevant for equipping a cyber-instructor with fundamental skills for dealing with the cyber environment is outlined in Table 1. Initially, the teacher is expected to be fluent with strategies to solicit for instructional goals of the virtual classroom from the community. The predominant attributes of the cyber-instructor constitute the ability to, (a) create a virtual classroom ‘wish-list’ from interviews and focus groups, (b) identify instructional challenges of the virtual classroom environment, (c) identify asynchronous/synchronous technology requirements for the preferred virtual classroom, (d) use the feature rubric to select the best virtual classroom tool (see Table 1).

### TABLE 1: SUGGESTED INSTRUCTORS’ VIRTUAL CLASSROOM FEATURE RUBRIC WHICH MIGHT BE ADOPTED BY THE INSTRUCTORS TO SELECT THE BEST VIRTUAL CLASSROOM APPLICATION

<table>
<thead>
<tr>
<th>Feature</th>
<th>Functionality</th>
<th>VC Alternative 1</th>
<th>VC Alternative 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A) SUPPORT OF VITAL COMMUNICATION MEDIA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does it support VoIP?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Does it support text chat?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Does it support full-duplex video communication?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td><strong>B) MECHANISMS FOR PRESENTING INSTRUCTIONAL MATERIALS COLLABORATION AND INTERACTION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does it support web browsing?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Is the whiteboard present?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Does it allow the users to load and present Power Point documents?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Can polling and quizzes be supported?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Is there any multimedia for presentation?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Can users share applications they use?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Can the VC facilitate interactive hand raising and real-time feedback?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td><strong>C) LOGISTICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What plug-in are required to setup the VC tool?</td>
<td>F</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Are playback for sound, audio and video supported?</td>
<td>T</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Is the VC tool compatible with other platforms?</td>
<td>WINDOWS XP plus</td>
<td>LINUX, MAC OS</td>
<td></td>
</tr>
</tbody>
</table>

THE WIBEKI/VC: COLLABORATIVE CONTEXT

The WIBEKI/VC, 2014 learning environment was created using botho.blackboard.com tool of Botho University. Two PGCHE classes (1 FTWN-JAN-D8-LTA-10-1 and 1 FTWN-JUL-D8-LTA-10-1) in the Department of Further Education at Botho University (Francistown) participated in the study. The students were enrolled in the same course, “Learning Teaching and Assessment”, and had the same instructor. The part-time group consisted of teachers who are relatively new to Higher Education but, all of them were graduates from Universities. All these are prospective teachers at tertiary institutions of learning/teaching. The group was given an activity that required them to make contributions on a wiki and comment on each other’s work. The participants were then graded after 2 weeks. The block-release group consisted of teachers who are exposed to Higher Education at Botho University. The group was given 3 assignments and the collaborative assignment (see Appendix E) was the third assignment of the three assignments in the D8-LTA course. After the activities, each participant from each group was asked to complete a questionnaire and 16 students were selected for interviews. To facilitate collaboration and interaction amongst participants, the block-release students were divided into 3 working groups and tasked to prepare a motivational paper for a research conference “THE ROLE OF TECHNOLOGY IN TEACHING, LEARNING AND ASSESSMENT” using a wiki prepared by the instructor on the botho.blackboard.com platform for Botho University. Each group was to explicitly deal with 2 or more key points which were provided in the collaborative assignment 3. Each individual participant was then monitored to check the contributions he/she makes. This implies that mere participation in a group did not guarantee marks for an individual group member. This collaborative assignment was allocated 21 days to be completed by each group.

SELF AND PEER ASSESSMENT OF THE PRODUCT AND PROCESS

The final mark for each student was arrived at by considering the product (the motivational paper) the process (students contributions through wikis and overall collaboration) and mark distribution factor (DF) (Lejk & Wyvill, 1996). The product was assessed using the rubric included in appendix E. The product’s mark was finalised and referred to as a group work mark (GM). The next step factored the assessment of the process. This involved team members determining how to share the group mark (GM) using a modified “...marks distribution model.” (Lejk & Wyvill, 1996). The following model was used to derive the individual marks from a given group product mark:

To calculate individual Final Mark (IFM) we use the following equation:

\[ IFM = \frac{\text{DF} \times \text{GM}}{n} \]

To calculate DF, we require a group score mean (\( \mu \)). \( \mu \) is the sum of all scores of the group members divided by the total number of the group members (n). We can model this as follows:

**Equation 2:**

\[ \mu = \frac{\sum x_i}{n} \]

DF combines two forms of assessment factors that is; (a) the self assessment factor (SA) and the (b) peer assessment factor (PA). Self assessment involves an individual group member allocating himself/herself a score for each given criterion within the range -1 to 3. 3 indicates that the group member performed better than most of the group members, 2 indicates an average performance in that respect, 1 means not good as most of the group members, 0 indicates that the group member did not make any contribution in this respect and finally, -1 indicates that the group member was a hindrance to progress. The elements can be;

- the level of enthusiasm, suggesting valuable ideas to the group, helping the group to function well as a team, and so on.

We can then model DF as follows:

**Equation 3:**

\[ DF = \frac{\sum \text{SA}_i + \sum \text{PA}_j}{n} \]

PA denotes the \( \sum \) criterion mark awarded to the individual by the peers. The lower limit is 1 indicating that at least there must be 1 or more criteria used to assess group activities. n is the total number of criteria used in that context. Similarly, SA denotes the \( \sum \) self assessment mark awarded by the individual towards his/her contribution against that element. PA is the \( \sum \) member of the group. n is the total number of group members in a given group. The same criteria were used for self and peer assessment. Appendix E presents mark calculations for the three groups that were involved in collaborative activity. The final mark
for the student is derived multiplying the product mark provided by the cyber-instructor by the DF factor obtained from students self and peer assessments (Lejk & Wyvill, 1996).

RESULTS
The results discussed in this section are presented according to the three fundamental tools that were used; the first results are based on the wikis and discussion forums, secondly the application of the marks distribution model (MDM); that combines a product mark with the process mark to derive the students’ final mark, and finally, we present the results of the “collaboration tools usage questionnaire” that collects the participants’ views on the implementation of the virtual learning process and virtual assessment.

WIKIS AND DISCUSSION FORUMS
Wikis were used to check if members of the group are making progressive contributions towards collaborative work. In particular, the “Participation Contribution” tool was used for this purpose. In this research the following facilities were used;
1) Compare to version X: compares the current wiki with the previous wikis done by the same participant. This enables the cyber-instructor to track some changes made to date and whether the participant’s contributions are relevant to the assignment (product).
2) Participation summary: provides a summary in terms of the words modified and the total page saves. For example, figure 2 shows the words modified as 5% and total page saves as 3% for John in the wiki entitled “Motivational Paper: The role of teaching technology in teaching, learning and assessment.”

FIGURE 2: PARTICIPANT’S CONTRIBUTION SUMMARY

Participant’s contribution summary had a dual role in monitoring collaborative work of students; (a) it served as a moderation tool enabling the cyber-instructor to check and confirm extreme cases of cyber-students’ assessment by peers or by themselves and (b) guided the group members during the process of developing the “motivational paper” during the collaborative group work. The cyber-instructor must keep checking regularly on the contributions made by group members to help them familiarise with the work being produced in order to upgrade and effectively use the wiki rubric during the assessment of the final wiki.

COLLABORATIVE TOOLS USAGE, SELF AND PEER ASSESSMENT STUDENT QUESTIONNAIRE 2014
The questionnaires were distributed amongst the Block Release class and 12 samples (of 13) were produced. The major questions discussed here relate to the views of participants on the benefit of the collaborative tools in facilitating virtual learning and their satisfaction. The key points of the survey are presented in Appendix D.
1) Benefits, effectiveness of the WIBEKI/01/2014 environment
The findings presented in the survey show that out of 12 respondents:
   a) 11(91.67%) of the respondents either ‘strongly disagree’ or ‘agree’ with the suggestion that “WIBEKI/01/2014 tools expand and reinforce their educational content” and 1(8.33%) of the respondents “disagree” with the same suggestion that “WIBEKI/01/2014 tools expand and reinforce their educational content”. None of the respondents ‘Strongly Disagree’ the same suggestion.
   b) Similarly, 11(91.67%) of the respondents ‘strongly agree’ or ‘agree’ with the view that “WIBEKI/01/2014 motivated them to participate in collaborative work” while 1(8.33%) “Disagree.” None of the respondents ‘Strongly Disagree’.
   c) Except for 1(8.33%) respondent, all respondents “strongly agree” 6(50%) or “agree” 5(41.67%) with the suggestion that “WIBEKI/01/2014 enhances one’s educational technology literacy”.
   d) 5(41.67%) respondents ‘Strongly Agree’ or 5(41.33%) ‘agree’ that through WIBEKI/01/2014 they “Added more knowledge on their teaching/learning strategies”. 2(16.67%) respondents “disagree” with the view. None all respondents either “Strongly Disagree” with this view.
   e) None of the respondents. ‘Strongly agree’ that “WIBEKI/01/2014 allows for well-paced classroom work” but, 10(83.33%) ‘Agree’, only 2(16,67%) disagree with the view that “WIBEKI/01/2014 allows for well-paced classroom work”. None of the respondents ‘Strongly disagree’ with the view.
In terms of group dynamics in dealing with the collaborative activity we have the findings on the survey show the following out of the 12 respondents:
   f) None of the respondents say that ‘Team members’ ability to devise effective methods of solving the problems” was “Extremely Effective”, 7(58.33%) say it was “Very Effective”, 4(33.33%) are saying it was “Somewhat Effective” and 1(8.33%) respondent is of the view that the group members were “Not so Effective” in that regard.
   g) In terms of “Considering other team members’ views”, 3(25%) respondents said that the team members were “Extremely Effective”, 4(33.33%) respondents said team member;
   h) 4(33.33%) of the respondents said that team members’ communication was “Extremely Effective” while 5(41.67%) of the respondents said that team members’ communication was “Very Effective” and 3(25%) said communication was “Somewhat Effective”. None of the respondents said the communication amongst team members was “Not so effective” or “Not effective at all.”
DISCUSSION AND IMPLICATIONS

THE WIBEKI/01/2014 VIRTUAL CLASSROOM

In the present study, WIBEKI/01/2014 was configured with four (4) fundamental elements that guide the learning, teaching and assessment processes; The first element is computer driven interactions, it addresses the nature of text

In the present study, WIBEKI/01/2014 was configured with four (4) fundamental elements that guide the learning, teaching and assessment processes; The first element is computer driven interactions, it addresses the nature of text

The findings of the present study can be summarised as follows:

a) WIBEKI/01/2014 is a useful tool in collaborative learning, teaching and assessment.

b) WIBEKI/01/2014 enhances students’ learning experience due to student-student and student-instructor interaction.

c) Although the mark distribution model is useful, it has been established in this study that there are chances of social loafing amongst students. These students tend to grade themselves higher during self-assessment. Therefore a detection mechanism must be in place to minimize as proposed by Mark Lejk and Wyvill, 1996.

CONCLUSIONS

This study found that using the WIBEKI/01/2014 collaborative tools for developing group work and online assignments at Both University was not as efficient as expected. When the PGCHE students were doing assignment 3, it was noticed that they could not convene on time for discussions because they were busy with other chores of the University. The group members reported having worked as individuals and met once to discuss progress. However, the primary purpose of the WIBEKI/01/2014 model seems to have been achieved because it is on the success of the online discussion forums, synchronous chats and online interaction
amongst students that matters in the virtual space. However, the setback was that the students lacked the appreciation that there is no urgent need to meet face-to-face when discussing on the virtual classroom space.

Assessment and effective feedback are part of the learning process and one wonders how this can be done best on the virtual classroom. Blackboard provides a platform for monitoring students’ engagement, contributions to the discussion forums and summary of each participant’s contributions. Furthermore, when using Blackboard the instructor can grade the students based on these contributions (botho.blackboard.com, 2012). However, educators need to take a holistic approach when dealing with the assessment of the cyber-learners by factoring in the assessment of the product and process (Lejk & Wyvill, 1996). In that way, the instructor will take assess the cyber-learner’s professional development and personal grooming abilities.

LIMITATIONS OF THE METHODOLOGY

The benefits of the WIBEKI/01/2014 model have been listed but, crucial issues need to be discussed that may challenge its implementation. These include:

- Network reliability: Network connectivity may be slow or not sufficient to handle multiple responses at the same time as discussed in the KatSRS model (Nkomo, Samsom-Zulu, & Chirau, 2014).
- Administration of the MDF for self and peer assessment requires rigorous monitoring and may be time consuming: Application of the algorithm, monitoring the use of the strategy against under and over rating amongst the cyber-learners is crucial. This becomes more stressing to the cyber-instructor if there are instances of social loafers.
- Learning preferences amongst students is no longer emphasised if there is over reliance on the WIBEKI/01/2014 model: The lack of face-to-face student, teacher interaction may disadvantage those students who prefer face-to-face and verbal communication with their instructors.

SCOPE FOR FURTHER RESEARCH

These findings are crucial and point to the need to prioritise the implementation of the activities suggested in the WIBEKI/01/2014 model because some learners are not IT literate to use the collaborative tools and more so the value and capabilities of the virtual tools on the internet. We need to capitalise on the “preparatory learning” of the model to train the learners on how to access the internet, use hyper text links, and interpret graphics texts on the digital instructions (Koh, 2001). Additionally, the same learner must have the diplomacy of a good team player (cyber-learner multiliteracies). Similar results have been confirmed in separate studies in non-Western countries (Wang, 2012). To that effect, cyber-instructors must focus on the effective use of the collaborative tools in promoting academic achievement amongst cyber-learners and make comparative studies on the efficiency of these tools against existing educational technologies such as KatSRS (Nkomo, et al, 2014) for the same purpose.

In order to optimize the MDA model, we need to find ways of involving learners in the whole process of assessment such as design of the assessment criteria, assessing themselves and their colleagues and evaluating the assessment process itself (Koh, 2001). In that way, some high degree of process ownership, belonging and accountability will be achieved amongst the cyber-learners.

REFERENCES

APPENDICES

A. THE RESULTS OF THE SURVEY CONDUCTED AT BOTHO UNIVERSITY ON STUDENTS’ OPINION AND USAGE OF ICT GADGETS

<table>
<thead>
<tr>
<th>Device</th>
<th>Not Present</th>
<th>Family Shares</th>
<th>Another member owns</th>
<th>I have my own</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop</td>
<td>83</td>
<td>21</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Laptop</td>
<td>6</td>
<td>0</td>
<td>12</td>
<td>63</td>
</tr>
<tr>
<td>Wireless WiFi Internet Access</td>
<td>30</td>
<td>6</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Internet</td>
<td>48</td>
<td>15</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>PDA</td>
<td>30</td>
<td>15</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>05</td>
</tr>
<tr>
<td>Digital camera</td>
<td>24</td>
<td>6</td>
<td>27</td>
<td>24</td>
</tr>
<tr>
<td>Portable MP3 player</td>
<td>35</td>
<td>18</td>
<td>9</td>
<td>15</td>
</tr>
</tbody>
</table>

B. How did you learn to use the computer?

1) Taught myself

C. How is your knowledge & skills for using ICT’s?

<table>
<thead>
<tr>
<th>Level</th>
<th>Poor</th>
<th>Average</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>24</td>
<td>18</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

D. Where do you get access to the internet off-campus?

<table>
<thead>
<tr>
<th>Access</th>
<th>No access</th>
<th>At home</th>
<th>Café</th>
<th>Library</th>
<th>Friend/Relative</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>6</td>
<td>42</td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

E. What ICT’s do you mainly use off-campus?

1) I do not use any
2) Desktop
3) Laptop/PDA
4) Cellular phone
5) Combination of the above
6) Does ICT you use have internet?

<table>
<thead>
<tr>
<th>Access</th>
<th>Yes</th>
<th>No</th>
<th>Don’t use one</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>80</td>
<td>18</td>
<td>3</td>
</tr>
</tbody>
</table>

B. COLLABORATIVE ACTIVITY: ASSIGNMENT 3
D. COLLABORATIVE TOOLS USAGE, SELF AND PEER ASSESSMENT STUDENT QUESTIONNAIRE

A. The benefits of collaborative tools in promoting learning, teaching, and enhancement of educational technology content. Which of the following do you agree with most?

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Partially Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. They equip and create educational content</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. They motivate and engage students in learning</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>3. They contribute to effective classroom management</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4. They facilitate the development of critical thinking skills</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

B. Your view on collaborative tools usage in promoting open discussions through use of collaborative tools. Which of the following do you think was extremely effective during the collaborative learning experience?

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Partially Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The ability to share and exchange ideas among group members</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2. The ability to share and exchange ideas among group members</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>3. The ability to share and exchange ideas among group members</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4. The ability to share and exchange ideas among group members</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

C. The effectiveness of self and peer assessment in gauging individual performance from the product and the process. Which of the following do you think is extremely effective?

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Partially Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peer and self-assessment of product and process</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Self-assessment of product and process</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>3. Peer-assessment of product and process</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4. Self-assessment of product and process</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

C. THE RUBRIC FOR COLLABORATIVE ACTIVITY: ASSIGNMENT 3

<table>
<thead>
<tr>
<th>Element</th>
<th>Standard</th>
<th>Partially</th>
<th>Unmet</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Provides a fresh and balanced perspective on the topic.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Provides a meaningful amount of insight, understanding, and reflection on the topic.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Explains important and relevant ideas clearly and effectively.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Proves to be an effective tool of teaching and learning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Uses a consistent organizational style that is generally appropriate for the intended audience.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Uses an effective and efficient use of headings, figures, bullet points, and white space to enhance the visual appeal and increase readability.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Makes the minimal use of primary sources of information in a meaningful way.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Provides a meaningful and effective use of headings, figures, bullet points, and white space to enhance the visual appeal and increase readability.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing Mechanics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Edits the text with a smooth grammar, capitalization, punctuation, and spelling.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Edits the text with a smooth grammar, capitalization, punctuation, and spelling.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Edits the text with a smooth grammar, capitalization, punctuation, and spelling.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Edits the text with a smooth grammar, capitalization, punctuation, and spelling.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL POINTS: 20
E. AN EXAMPLE OF HOW DERIVE THE GROUP MEMBERS’ MARKS USING THE MDF ALGORITHM

<table>
<thead>
<tr>
<th>Marks awarded to:</th>
<th>Bertha</th>
<th>Kitso</th>
<th>William</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks awarded by:</td>
<td>Be</td>
<td>Kl</td>
<td>Wi</td>
</tr>
<tr>
<td>Motivation/responsibility/time management</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Adaptability</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Creativity/originality</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Communication skills</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>General team skills</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Technical skills</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Totals</td>
<td>43</td>
<td>40</td>
<td>38</td>
</tr>
</tbody>
</table>

We apply equation 2 to get $\mu$:

$$\mu = \frac{(43+40+38)}{5} = 40.33333$$

We apply equation 3 to calculate the $DF$:

- Bertha’s $DF = \frac{43}{40.33} = 1.066204$
- Kitso’s $DF = \frac{40}{40.33} = 0.991818$
- William’s $DF = \frac{38}{40.33} = 0.942227$

We use equation 1 to get IFM where group score is 57%:

- Bertha $1.066*57\% = 60.77$
- Kitso $0.992*57\% = 56.53$
- William $0.942*57\% = 53.71$
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With sincere regards

Thanking you profoundly

Academically yours

Sd/-
Co-ordinator

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