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Hybrid Collaborative Learning in Geography Micro-Teaching: A South African Case Study
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ABSTRACT This paper explores how the implementation of a particular hybrid collaborative learning design (classroom-based and web-based) in Geography micro-teaching can assist student teachers in the planning and presenting of learner-centred micro-lessons. Data were collected via questionnaires, structured focus group interviews with six students and a comparison of student teachers' teaching and learning activities implemented in micro-lessons over the four week period. Findings from the study indicate that student teachers view the implementation of hybrid collaborative learning during micro-teaching sessions as a positive learning experience. The new learning environment in micro-teaching created opportunities and facilitated experiences that developed student teachers' capacity to reflect on their own and fellow students' practices in micro-teaching. Students' micro-lessons posted on "VideoANT" provide evidence that the new learning environment in micro-teaching supports and assists students in the effective planning, design and implementation of learner-centred instruction of Geography micro-lessons.

INTRODUCTION

The education policies of South Africa supported the move from teacher-centred to learner-centred instruction in schools and at all Higher Education Institutions (South Africa 2003, 2011). After 17 years of Outcomes based Education in South African classrooms, it is natural to assume that teachers are by now proficient in the implementation of learner-centred instructional approaches and methods. However, research indicates the contrary - it seems that teacher-centred instruction is still dominant in most South African classrooms (Van Wyk 2012; De Waal and Grösser 2009; Alexander et al. 2010; Warnich and Meyer 2013). The main reason for this is that most teachers were once taught in a traditional teacher-centred environment at school and even at university level. Furthermore, during practical teaching sessions the examples set by the teachers who act as role models to the student teachers, further encourage the implementation of direct teacher-centred instruction in the classroom (De Waal and Grösser 2009). It is therefore necessary for tertiary institutions concerned with teacher training in South Africa to implement strategies to assist student teachers in instructional practice transformation.

Lim and Chan (2007) point out that it is a challenge to effectively shift pre-service teachers away from traditional pedagogical beliefs towards constructivist thinking. Muijs and Reynolds (2002) emphasize that belief systems are dynamic mental structures that are susceptible to change by practical experiences. This implies that student teachers who engage in socio-constructivist learning activities or observe the implementation of learner-centred instructional strategies are more likely to change their traditional pedagogical beliefs and adopt the socio-constructivist approach as their own. Korthagen (2004) points out the importance of offering a learning environment which stresses learner-centred instruction. Therefore, Frick et al. (2010) emphasize that teacher educators need to create opportunities and facilitate experiences that will develop the student teacher's capacity to reflect on his or her practice. It is against this background that a study was conducted in a South African context whereby a particularly hybrid collaborative learning (classroom-based and web-based) environment design was incorporated during micro-teaching sessions in Geography education to assist student teachers in the planning and presentation of learner-centred micro-lessons.

Micro-teaching

Micro-teaching, a common practice in teacher training programmes, originated in the United States in the 1960s (Grossman 2005) and can provide student teachers with hands-on learner-centred teaching experiences outside of the school classroom. Microteaching is described as

a scaled-down, simulated teaching encounter designed for the training of student teachers. and can enable

- students to develop and improve teaching and learning skills (Benton-Kupper 2001).

Amobi (2005) and Benton-Kupper (2001) indicate that students themselves find micro-teaching to be a useful and enriching training tool.

From literature it is evident that micro-teaching designed on the principles of socio-constructivism and meaningful interaction, should include internal and social negotiation, appropriate responses to certain triggers, argumentative dialogue, contributions towards evolving ideas and the offering of alternative perspectives while solving real tasks (Lapadat 2002). When entering into dialogue with students regarding micro-teaching lesson presentations, Benton-Kupper (2001) emphasises that feedback to student teachers should be detailed rather than general in nature. She describes detailed feedback as being "supportive" and containing constructive feedback and suggestions that can be used to improve student teachers' teaching methods. Darling-Hammond et al. (2005, 412) recommend that "students develop an analytic framework to assess the micro-teaching performances of their peers". The critical examination or assessment of student teachers' lesson presentations during micro-teaching correspond with Lim and Chan's (2007) view that "to critically examine or reflect on the strengths and limitations of each approach may restructure students' existing beliefs and encourage them to adopt new instructional practices that are consistent with their pedagogical beliefs".

Hybrid collaborative learning in teacher education

Fernandez and Robinson (2006) highlight the importance of collaboration amongst student teachers when planning and presenting micro-teaching lessons and then reflecting thereon. Successful collaboration, according to Strijbos et al. (2004), requires the careful design of the learning environment for group interaction and the provision of scaffolding, leadership and support by the facilitator to promote students' understanding. In recent literature a distinction is made between classroom-based and web-based collaborative learning (Strijbos and Fischer 2007; Jia 2005). A mixed mode of instruction that formally combined traditional face to face learning (or classroom-based learning) and pure on-line learning (or web-based learning) is referred to as hybrid or blended learning. The terms *hybrid* and *blended* learning are sometimes used alternatively, but refer to one and the same thing (Olapiriyakul and Scher 2006). Jianhua and Akahori (2001) point out that optimum collaborative learning

performance occurs where classroom-based and web-based collaborative learning are integrated – in other words, within a hybrid collaborative learning environment.

Classroom-based collaborative learning is adopted in a classroom environment where face-to-face interaction is recognised as the main interactive style between instructor-student and student-student in order to produce optimal resolutions for learning problems (Jia 2005). Learning is thus a social activity where peers play an important role in encouraging learning. Collaborative learning is also viewed as the result of a persistent attempt to construct and maintain a shared conception of a problem (Rochelle and Teasly 1995) that leads to a deeper level of learning, critical thinking, shared understanding and long term retention of the mastered material (Kreijns et al. 2003).

In recent years, many researchers have adopted technology (computers, internet or online technology) as a key feature to engage students in web-based collaborative learning (McInnerney and Roberts 2004). Cox et al. (2004) highlight that current web-based tools create more flexible conditions for collaborative learning in terms of time and place both for students and instructors. According to Ma (2009, 145), web-based collaborative learning can improve the "quantity and quality of social interaction amongst students and between educators and students as these tools make the sequence of interactive behaviours more visible to participants, improving the possibilities for mutual understanding". In web-based learning environments students are interactive through the Internet. Internet communication tools such as e-mail, video, audio systems, virtual seminar and bulletin boards, allow students to exchange information, contribute to discussions and examine alternative perspectives. Students can communicate interactively on a one to one basis or in groups, enabling opportunities for collaboration (Hong et al. 2001).

With the available open platforms in support of users' interaction and participation, Web 2.0 technologies enable collaborative learning as well as knowledge dissemination and sharing to add a new learning dimension in traditional classroom settings and supplement traditional teaching methods. In particular, Web 2.0 technologies supports "any time, any place" learning and may produce powerful learning experiences when it serves as cognitive reflection and amplification tools that assist the users to establish meaning through the act of self-design of knowledge databases (Boulos et al. 2006).

In teacher training, with special reference to micro-teaching, the development of new technologies assists Higher Education institutions with implementation of collaborative learning environments. The effective use of video-based pedagogy has been shown to be enhanced through the use of web-based environments. Student teachers can access various

hyperlinked video cases associated with textual description, teacher reflections and expert analysis (Willams et al. 2001) and they can also participate in web-based dialogues with peers to improve reflective practices (Steve and Weisner 2004). The sharing of micro-teaching videos through online community technology also facilitates collaborative learning amongst the community members, exposing student teachers to various teaching and learning perspectives of their peers. Darling-Hammond (2006) concurs when she states that students participating in collaborative learning activities contribute to one another's learning as members of a professional community. In this manner the student teachers expand their personalised view on learning to a more social learning environment and thereby broaden their scope with regards to study techniques and the planning and design of teaching strategies, teaching content and use of resources.

Grossman (2005) states that recent developments in video annotation tools make video reflection increasingly viable and accessible. Video annotation tools offer the potential to support both reflection and analysis of one's own teaching. Santagata and Guarino (2010) underline the use of video annotation as a way to strengthening student teachers' ability to learn about their own teaching. These tools provide potentially important methods for scrutinizing instructional decisions within a specific context (Stevens 2007). Video analysis programs such as Transana™ (www.transana.org), DIVER™ (diver.stanford.edu), Constellations™ (orion.njit.edu), StudioCODE and VideoANT provide, according to Rich and Hannafin (2009), significant data-mining capabilities, management and fine-grained analysis and reporting opportunities. They also mention other video-annotation tools with different functions, namely VAST, VITAL, the VAT, VideoTraces, VideoPaper, MediaNotes, and Studiocode.

For the purpose of this study, "VideoANT" as an example of a Web 2.0 application tool designed by Hosack, Miller and Ernst (2009) to create text-based annotations integrated within online video timeline, was implemented during Geography micro-teaching sessions. This application allows students to tag a portion of a video where they wish to make a comment or give feedback on the video. It allows users to make time-line based textual comments in synchronization with on-line video. It is ideal for peer assessment and providing feedback or facilitating peer reviews. VideoANT can also assist students within a collaborative learning environment to reflect on fellow students' micro-lessons. In studies where participants reflected on teaching practice both in writing and via collaborative discussions, participants reported the greatest benefit from discussing their teaching with others (Griswold 2004).

RESEARCH DESIGN

Context of the case study

The participants in this one shot experimental case study (Leedy and Ormrod 2003) consisted of student teachers in two of the teacher training programmes of a university in South Africa. The Faculty of Education Sciences at this particular university offers both a 4 year Bachelor of Education Degree (B.Ed.) and a 1 year Post Graduate Certificate in Education (PGCE), which prepares candidates to teach in one of the following educational phases: Foundation (Grades R-3), Intermediate (Grades 4-6), Senior (Grades 7-9) and Further Education and Training (FET) (Grades 10-12).

Research objectives

The purpose of this study was to determine:

- the perceptions and experiences of Geography student teachers with this particular hybrid collaborative learning design in Geography micro-teaching;
- whether student teachers' instructional approaches shifted from teacher- to learner-centred during micro-lesson presentations over the 4 week research period.
- design changes that can improve the effectiveness of the hybrid collaborative learning design in Geography micro-teaching.

Participants

Fifteen Geography student teachers, eleven (n = 11) in their 4th year of the BEd and four (n=4) PGCE candidates who registered for the Geography Subject didactic modules. The population consisted of 11 male and 4 female students. This sample size correlates with the sample size applied for micro-teaching research in literature (Scheeler et al. 2006; I'Anson et al. 2003).

A particular hybrid collaborative learning design in Geography micro-teaching

In the Geography didactic modules of the 4th year of the BEd and in the PGCE there are three scheduled contact sessions per week (One contact session = 50 minutes). In the past, two of these sessions were used for the study of theory and the third contact session for micro-teaching. With the integration of this particular hybrid collaborative learning environment in

micro-teaching, the theory was completed during the first 5 weeks (all 3 periods per week) of the semester while all scheduled contact sessions during the last 4 weeks of the semester were dedicated to micro-teaching. During the theoretical sessions the focus was on the different teaching and learning theories, strategies, methods and teaching aids, as well as on assessment strategies appropriate for Geography education. The students also had to plan and design learner-centred instructional lessons, embedded in the socio-constructivist approach (cf. Jonassen 1999).

The lecture halls that are used for the presentation of the micro-lessons during micro-teaching sessions are designed and organised to resemble a normal school classroom, complete with a black board, projector and computer with access to power point and Internet. During lesson presentation it is expected of student teachers to make use of teaching aids such as power point presentations, transparencies, worksheets, posters and models.

For purposes of the study, the students grouped themselves into 3 groups with 4 members each and a 4th group consisting of 3 members. It is important to mention that one of the groups consisted of only male candidates. A timetable was provided with dates of recording sessions of each group's micro-lesson as well as the time slots allocated to the assessment and moderation sessions of the different groups' micro-lessons on the web. Students regularly received emails to remind them whenever the videos were uploaded on the web for assessment and moderation. The Geography lecturers acted as facilitators and recorded the micro-lesson presentations of the student teachers.

For purposes of lesson presentations during micro-teaching sessions for this study, the Geography student teachers had to select appropriate themes for a specific school phase as prescribed in the South African National Curriculum Statements and the new Curriculum Assessment Policy Statements for Geography (South Africa 2011). The purpose of these micro-teaching sessions was to ensure that the student teachers practiced the implementation of learner-centred instructional strategies and activities so as to learn how to actively involve the learners in the learning process and promote communication and collaboration amongst learners in the classroom.

With the implementation of the hybrid collaborative learning environment, the facilitators clearly specified the expected academic tasks of the student teachers and explained the hybrid collaborative structures (see Figure 1). Student teachers were implored to listen carefully to comments from each member of the group and be willing to reconsider their own judgements and opinions where appropriate. It was therefore emphasized that every group member be afforded an opportunity to contribute his/her ideas. After a collaborative discussion, the

group had to formulate recommendations for possible improvement of the specific micro-lesson.

Insert Figure 1

Furthermore, since the classroom-based collaborative learning environment in this study specified that every group member had to plan and present a learner-centred micro-lesson, all group members were expected to assist the presenter in the planning phase of the micro-lesson. The presenter had to incorporate meaningful suggestions from group members into his/her micro-lesson. Every week a different group member planned and presented a micro-lesson, with the other group members acting as classroom learners during the presentation. Every micro-lesson was video-recorded by one of the facilitators.

After recording the micro-lesson presentation on a digital video camera, it was converted with applicable software to a flash video format (*.flv) so that it could be uploaded and annotated in VideoANT. The VideoANT programme was then embedded in the university's learning management system (LMS), Efundi, from where it could be accessed, operated and managed via the Efundi platform. A website for each group was created on Efundi from where they could monitor the assessments of their own lessons and assess and moderate the lessons of other groups as uploaded weekly by the facilitators. Only the group members and their facilitators had access to their specific website (See Figure 2).

Insert Figure 2

Before Group B (see Figure 1) could comment on Group A's recorded lesson presentation on the web, every member of Group B had to complete an individual lesson assessment rubric while viewing Group A's presentation on VideoANT. The main objective of the assessment rubric was to support the group members assessing the micro-lesson. After completion of the rubric the group had to provide meaningful written constructive commentary and feedback via VideoANT. Group members were encouraged to specifically peer assess the learner-centeredness of the presentation and to make commendations as well as recommendations for improvement.

After a two day period had elapsed, the website manager (facilitator) disconnected the video from Group B's website and uploaded it onto Group C's website for comments on and/or moderation of the feedback provided by group B. Group C had to indicate whether they

agreed with Group B's commentary and feedback on Group A's presentation. Where necessary, Group C could also upload additional time-line based textual comments and feedback on VideoANT. The different group comments were distinguished via the mentioning of a distinctive group number in the commentary box (See Figure 2). Every week a different group was responsible for assessment and moderation of the group presentations. Although every group could follow the commentary and feedback of the other group presentations on the web, access to write commentary on a presentation was only allowed to the two groups respectively responsible for the assessment and the moderation of the lesson presentation. Ultimately the presenting group compiled a reflective report with a summary of the benefits of the assessment of the lesson presentation and an indication of how the commentary and feedback would feature in a follow-up micro-lesson presentation (Refer to Figure1).

At the end of each week the facilitator utilised the two hour contact session for an in-depth classroom-based collaborative discussion on the commentaries and feedback of the different groups on the different group presentations. The facilitators were mainly responsible for facilitation of discussions amongst students with regards to the analysis of the lesson presentations as well as the critique and the suggestions regarding how to present a more learner-centred lesson. The presenter of the micro-lesson and his/her group were afforded the opportunity to defend their instructional approach, style and lesson activities as applied during the specific micro-lesson. The facilitator used the lesson presentations and written lesson planning to compile an assessment mark for the group.

Data gathering methods and analysis

A mixed-method approach that involved the gathering and analysis of both qualitative and quantitative data were used (Cresswell 2003). The researcher employed the following qualitative and quantitative data gathering methods:

- A descriptive research approach where data were gathered using a structured 30-item questionnaire developed by the authors. The first step in the construction of the questionnaire was an extensive review of literature and the identification of key concepts. The questionnaire gathered information on students' perceptions and experiences of classroom-based collaborative learning (20 items) and web-based collaborative learning (10 items) of this particular hybrid collaborative learning design. The responses were rated on a five point Likert scale ranging from strongly disagree to strongly agree. This small sample size makes it impossible to calculate the reliability and validity of the questionnaire.

- The data collected in the focus group interviews consist of tape-recorded group discussions held by six student teachers from the different groups who share their thoughts on and experiences with the implementation of the specific hybrid collaborative learning in micro-teaching
- Learning journals of student teachers with personal reflections and opinions regarding the benefits of the implementation of a hybrid collaborative learning environment in micro-teaching.
- Students' micro-lessons posted on VideoANT to provide evidence, if any, of a shift from teacher-centred to more learner-centred instruction during lesson presentations.

Ethical considerations

The participants had to give written consent before the recordings could be uploaded onto the web. Furthermore, an undertaking was signed by all involved to ensure that the recordings not be used illegally or for any other reason than the original intent. The investigation complied with all the ethical regulations of the university under whose auspices the research was conducted. Participation was free and voluntary, and any participant could withdraw at any time.

Limitations of the study

The authors agree that the study has a number of limitations. Firstly, the pilot study population was only a small number of student teachers, which limits the generalizability of the results. Secondly, the hybrid collaborative learning environment was designed for South African conditions where a number of candidates did not have internet access at home. Thirdly, at the time of the study, some of the student teachers were not well trained in collaborative learning skills which could have had an influence on their perceptions of this particular hybrid collaborative learning design. A proposed extended research project will address these issues.

DISCUSSION OF FINDINGS

Perceptions of the value of hybrid collaborative learning in micro-teaching

All members of the study population perceived hybrid collaborative learning to be a positive and valuable learning experience. Participants identified the effective alternation between

classroom-based and web-based collaborative learning as beneficial in terms of the contribution thereof towards the planning and presentation of more learner-centred instruction in the Geography micro-lessons. The questionnaire provided for the student teachers to indicate their perceptions of the hybrid collaborative learning environment at the beginning as well as at the conclusion of the study.

After the first week, the majority of the candidates were moderately positive (n=6) to positive (n=5) with regards to implementation of the hybrid collaborative learning design. After a four week period the perceptions of the students regarding this matter advanced to positive (n=6) and very positive (n=9). The following entry by one of the participants in his learning journal summarises the positive perceptions of the candidates: "*The hybrid collaborative learning environment in micro-teaching is an excellent and meaningful way to assist groups in planning and presentation of learner-centred instruction in micro-teaching. It was in my opinion more valuable than the weeks spent at schools for practical teaching"* (Participant A). This is a very important observation, as Mayer-Smith and Mitchell (1997) indicate that the perceptions of students regarding certain aspects of teaching and learning can only be changed if students are gradually exposed to a new approach or concept. Positive perceptions towards collaborative learning are important to help change the students' conceptual beliefs regarding the teaching and learning of Geography. In the hybrid collaborative learning environment in Geography microteaching, student teachers are exposed to a totally new learning environment. In the learning environment Geography student teachers are expected to support one another in the planning and presentation of micro-lessons, after which the students also assess fellow students' micro-lessons. The inputs by group members as well as the feedback and commentary from other groups and the facilitators assist with the planning and presentation of better learner-centred micro-lessons in group context. In this learning environment Geography student teachers are expected to integrate the theory they learned in the Geography didactic modules with the practical implementation of learner-centred instruction.

In the questionnaire subsections classroom-based and web-based collaborative learning, the participants had to indicate their perceptions regarding the value of the different aspects associated with classroom-based and web-based collaborative learning.

Classroom-based collaborative learning in Geography micro-teaching

All the participants (n=15) held positive views on the use of classroom-based collaborative learning in micro-teaching. Items in the questionnaire that the majority of participants totally

agreed on in terms of its contribution towards teaching and learning include: "*Feedback on lesson presentations from facilitators and fellow-students during contact sessions improved students' collaborative skills"* (n=10), *"Collaborative learning improved the social skills of the students*" (n=9), "*The implementation of collaborative learning contributed towards students' positive attitudes regarding learner-centred instructional approaches"* (n=9) and "*In group context it is easier to deliver constructive criticism and commentary on a fellow-student's lesson presentation*" (n=9).

From the feedback it is interesting to note that the candidates indicated that the implementation of collaborative learning in micro-teaching contributed to a positive perception of learner-centred instruction in Geography teaching.

The value of collaboration and input from group members within the classroom-based collaborative learning environment was highlighted during the focus group interviews: "*My group members' input in the planning of my micro-lesson definitely contributed to the quality of learner centeredness of my lesson presentation* (Participant F)". Some of the group members even indicated that they practised the presentation of their lessons in group context before the video recording thereof: *"With the practice of my micro-lesson my group members were encouraged to give their input in order to improve my lesson presentation*" (Participant D). These findings support those of Sawyer (2006) who emphasize that interacting groups can also provide feedback, support and monitor one another's work. Classroom-based collaborative learning in micro-teaching offers a space in which group members can reflect face to face on their own and fellow group members' micro-lessons to help improve their learner-centred micro-lessons.

During the contact session at the end of the week, the facilitators and other groups also get the opportunity to reflect and comment on the different groups' micro-lessons. The following journal entry emphasizes the value of the contact session between facilitator and all the groups at the end of the week (See Figure 1): *"In my opinion the contact session at the end of the week is the most important link to ensure effective cohesion of all that was learnt within the hybrid collaborative learning environment. During these contact sessions the facilitators and some groups who saw the micro-lesson for the first time, could also reflect and comment on the different groups' assessment and moderation of the various micro-lessons".* This remark by the respondent regarding classroom-based collaborative learning supports the view of Krajcik et al. (1994, 490) that "*…teachers construct their knowledge through social interaction with peers, through applying ideas in practice, and through reflection and modification of ideas".*

Web-based collaborative learning in Geography micro-teaching

From the findings of this study it is evident that the majority of the participants were positive regarding the implementation of web-based collaborative learning. The participants strongly agreed on the following four items: "*The commentary and feedback from fellow-students on VideoANT contributed towards the improvement of my instructional skills*" (n=10), *The integration of technology in the micro-lessons improved collaboration amongst group members* (n=9), "*VideoANT made it possible for students to easily review parts of the recorded lesson presentations which made commentary and feedback all the more meaningful* (n=9), and "*Viewing my own and other students' presentations on VideoANT improved my teaching and learning skills"* (n=8).

The journal entries of most of the participants confirm the value of group commentary and feedback on VideoANT as a web-based tool to improve their teaching and learning practice. The following journal entries specifically support this statement: "*Whenever our group assessed or moderated the micro-lesson of one of the other groups and was uncertain regarding a teaching or learning activity, we could quickly and easily access VideoANT and rewind to the particular part of the presentation. This factor definitely encouraged communication and group discussion amongst group members"* (Participant N). "*Micro-lessons on VideoAnt can be assessed and moderated any time, any place" (Participant B); and "Monitoring of comments and feedback of groups parallel to the micro-lesson on VideoANT necessitated that commentary be concrete and to the point (Participant C).*

The abovementioned findings correlate with certain findings in literature, for instance Fernandez and Robinson (2006) who emphasize that students view collaboration as a highly important learning tool in micro-lessons. Luttenburg and Bergen (2008) also indicate that participants welcome the sharing of different points of view and the feedback contributed by group members, while Wu and Kao (2008) state that student teachers are usually satisfied with the peer assessment activities supported by the streaming video system and that the mark video feature is useful in providing more specific comments about peer's teaching. These findings support the suggestion of Jonassen et al. (2003) that technology should be a partner in the teaching and learning process and will engage and support reflective thinking. The findings also concur with Charteris and Smardon (2013, 168) who reported that using video annotation to have a "second look, second think" allowed student teachers to "think further and more deeply on their learning dialogue, affording additional insights".

During the focus group interviews the participants indicated that they often visited the web during the week to see the feedback and commentary on their micro-lessons. Participant C pointed out in the interviews: *"As a group we could not wait to view the commentary and feedback from the other groups on our lesson presentations. We evaluated those comments and discussed whether we agreed with the feedback or not"*. In this case, the web-based technology definitely encouraged the groups to reflect on their lesson presentations and to evaluate other groups' commentary. It also increased social interaction and reflection amongst group members and stimulated critical thinking. VideoANT provided excellent opportunities for interaction amongst group members and the different groups that would have been hard to achieve without the technology. The implementation of VideoANT in micro-teaching supports the findings of Harford and MacRuaire (2008) that peer interaction is important in scaffolding the reflective process. Some of the groups' reflection, comments and feedback on the micro-lessons quoted on VideoANT's commentary block include:

- *"In a cooperative learning environment you as a teacher have to facilitate the learning process among learners. Use the asking of questions to guide learners, but do not provide the learners with the answers"*.
- *"The assignment given to learners is not clearly formulated. In the learner-centred approach it is important that learners know precisely what is expected of them. Provide the assessment criteria which will be used to assess the assignment, with the assignment"*.
- *"The learners may also be involved in the assessment of their own or fellow-students' assignments. The assessing agent in the classroom could therefore be alternated more"*.
- *"Do not use only the question-and-answer method in your lesson. Alternate with other teaching methods, for example when dealing with the push and pull factors in rural to urban migration a debate can be used effectively as teaching method. Learners are not given the information, but are challenged to make their own discoveries and to defend their points of view"*.

From the above reflections and commentaries by the different groups on VideoANT, it is clear that they submitted critical assessments of the groups' implementation of learner-centred instruction during the micro-lessons. In this regard VideoANT is a valuable tool for thoughtful and critical reflection among the different groups on each other's' micro-lessons. The text-based annotations integrated within online video-timeline on VideoANT allow students to tag a portion of a video where they wish to make a comment or give feedback on the video. Group members know precisely where and what other group members suggest on

the video to improve their micro-lessons (Refer to Figure 2). However, it is important for the facilitators to provide feedback to student teachers on their assessment and moderation of fellow students' micro-lessons. Furthermore, the learning conversation among fellow students and facilitator enabled the student teachers to construct their own feedback utilising primary data rather than receiving feedback through the lens of another and in doing so destabilising the traditional power relationship between giver and receiver of feedback (Charteris and Smardon 2013).

Difficulties and frustrations in the hybrid collaborative learning design for micro-teaching

From the responses to the classroom-based and web-based section in the questionnaire it is evident that some participants' opinions are less positive regarding two main issues of this particular hybrid collaborative learning design: a) the time issue: *"To find time in our busy schedules for collaboration that suited all group members was mostly challenging"(n=10); and b) "Certain group members didn't carry their weight but expected of other group members to do most of the work" (n=5);* and *"At times there was conflict evident amongst some of the group members (n=4)".*

The first of these issues was the time factor that was also highlighted by some participants in the focus group interviews and in their learning journal entries. A journal entry by participant B effectively summarises this problem: "*It was really difficult to find a time for collaboration during the week that suited all the group members. The main reason for this was the fact that all group members had many scheduled classes during the day and most of them were involved with organised student activities after scheduled class hours".* As with the findings of the classroom-based collaborative learning, some of the participants indicated during the focus group interviews that web-based collaborative learning is not without challenges, for example: *"Not all my group members have internet access at their homes, therefore they had to be on campus in the classroom or the library in order to view the micro-lesson presentations on the web. It was no easy task to find a suitable time or place for such an exercise"* (Participant N). As internet access in South Africa improves, this problem will also be solved.

During the focus group interviews, some of the participants indicated that viewing the presentations and writing group commentary on VideoANT was also time-consuming. Participant L wrote as follows: *"The discussions amongst group members when commenting on a group's micro-lesson presentation on VideoANT definitely took a lot of time. First the group had to watch the video, then they had to discuss the presentation and only then write*

their opinions and commentary on VideoANT. When group members differed in opinion, there was usually a debate and the video had to be replayed until consensus was reached. This is similar to the findings of Wu and Kao (2008) who emphasize that students find it time consuming to watch teaching videos of peers and difficult to arrange time to meet and complete group tasks. However, it is important to point out that the discussions and reflection between group members provide opportunities to engage in pedagogical reasoning that, according to Youngs and Bird (2010), would help students move toward mastery of teaching.

The second issue identified by the participants was conflict amongst some group members. One of the groups consisting only of male students, experienced more conflict than the mixed gender groups. In the focus group interviews one of the participants from this specific group stated as follows: "*Some of the group members of my group did not contribute to the discussions and were also not willing to listen to other group members' opinions*" (Participant I). Another member of this specific group stated the following in his learning journal which clearly indicate his dissatisfaction: "*When group members don't contribute and carry their weight, it reflects badly on the whole group*". It is understandable that some of the participants reacted in this manner since Darling-Hammond (2006) explains that for learning activities to be characterised by collaboration, all members of a professional community must contribute to the mastering of the group's objectives. Payne and Monk-Turner (2006) point out that students are often inexperienced in working collaboratively, have difficulty meeting because of conflicting schedules and priorities, are intimidated by the amount of work and organization involved in collaborative-learning experiences, and are often frustrated by students who do not carry their weight.

Hybrid collaborative learning and learner-centred instruction in Geography micro-teaching

Since this study attempted to determine whether this particular hybrid collaborative learning design supports the training of Geography student teachers and improves the implementation of learner-centred instruction in Geography micro-lessons, the teaching-learning activities implemented in the micro-lessons of the different groups as uploaded on VideoANT over a four week period were compared. The results of this comparison are indicated in Table 1 where the occurrence of the different teaching-learning activities in the different lesson presentations from week 1 to week 4, are summarised.

Insert Table 1

From Table 1 it is evident that the participants mainly focused on teacher-centred instructional activities in the micro-lessons presented during the first week of micro-teaching. Mostly the student teachers explained and demonstrated content, read from text books and taught from power points (43%) and used questioning as monitoring tool (35%) during their lesson presentations. The assessment of teaching-learning activities was mainly guided by the teacher student him/herself (100%). Although the focus in the Geography subject didactics was on the implementation of learner-centred instruction, the student teachers in the first micro-lesson presentation focused more on what the teachers were imparting than on what their learners were learning.

In the hybrid collaborative learning environment the type of engagement in lesson presentations from week 2 to 4 gradually became more learner-centred. Students tried to actively engage the learners in the learning process and expected of learners to discover information on their own and with the support of their peers. Although teacher-centred activities such as explanations and demonstrations of content and questioning by the teacher were still implemented, the learner-centred activities such as discussion of themes in cooperative learning environments and groups, class discussion, reports and feedback by learners also featured as lesson activities. Furthermore, the teacher students made use of different assessment agents to assess learners' assignments and activities (refer to table 1). These results support the perceptions of participants that this hybrid collaborative learning design can assist and support students in planning and presenting more learner-centred and thereby more effective micro-lessons in the Geography classroom. As is supported by the findings of this study, Jianhua and Akahori (2001) concur that optimal collaborative learning performance should integrate web-based and classroom-based collaborative learning.

Recommendations to improve the particular hybrid collaborative learning design in Geography micro-teaching

As noted earlier, findings from the pilot case study indicate that most of the participants gave very positive feedback with regards to the use of hybrid collaborative learning in micro-teaching. From the findings of the study the following issues should be addressed in a follow-up study in order to improve the particular hybrid collaborative learning design in Geography micro-teaching:

- Student teachers should have a solid theoretical foundation on collaborative learning environments as preparation for the training in and exposure to the hybrid collaborative learning environment during micro-teaching. In this case knowledge really is power and can decrease frustration with fellow-students within a collaborative learning environment.
- The implementation of hybrid collaborative learning in Geography micro-teaching can occur over a longer period during the semester. Instead of first completing the theoretical section and thereafter the micro-lessons, the theory and application thereof can be integrated. The micro-teaching sessions can stretch over a period of 8 weeks, thereby increasing time for planning, presentation, assessment and moderation of micro-lessons.
- All groups participating in such a study should be gender-heterogeneous in composition.
- For candidates without Internet access at their homes there should be a specific venue on campus to watch, assess and moderate micro-lessons on VideoANT.
- The current design provides for a group member to present the micro-lesson to his/her own group members. It might be more valuable and feedback more objective if the lesson planned by one group is presented to another group.
- In a future study video-cameras or tablets can be provided to participants so that they can record their own group's micro-lessons. This will afford them the opportunity to re-record a lesson in order to improve the quality of the recording. Furthermore, possible discomfort or fear that the presenter may experience when a facilitator records the lesson presentation may decrease if the groups record their own lessons.

CONCLUSION

Grossman and McDonald (2008, 189-190) suggest that pedagogies in teacher training need to approximate practice in such a way that prospective teachers can engage in "intensive, focused opportunities to experiment with aspects of practice and then learn from those experiences Findings from this research indicate that the use of this particular hybrid collaborative learning design in micro-teaching in a South African context is effective in providing an alternative way of helping pre-service Geography student teachers to develop learner-centred instructional approaches in classrooms. This hybrid collaborative learning environment enables students to view micro-lesson presentations in a more critical manner and to judge the learner-centeredness thereof within group context. It provides students with a

platform for meaningful social interaction which include: assessment and feedback, monitoring, internal and social negotiation, arguing against differing points of view, adding to evolving ideas and offering alternative perspectives while planning and presenting micro-lessons, thereby contributing towards the improvement of their own and peers' teaching and learning skills. The implementation of this specific hybrid collaborative learning design in Geography micro-teaching challenges Geography student teachers' existing pedagogical beliefs. It offers a safe environment where students can reflect on their own and fellow students' micro-lessons.

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