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Developing a strategic pedagogy for the implementation of continuous assessment in a teacher training college

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Abstract
Implementation of continuous assessment is not as simple as it may seem. Teachers in Malawi have resisted this method of assessment, despite it being a government requirement. Investigation in this regard has led to the identification of resistance factors such as large class sizes, lack of resources, resistance to change from the old tradition, lack of support from various stakeholders and pressure from government to complete the curriculum. While scholars have suggested ways of mitigating the challenges facing effective continuous assessment implementation, the question arises as to how pre-service teachers are actually trained and prepared to implement continuous assessment. The conceptual framework for this research was based on the tenets of Deliberate Practice and Direct Instruction. Using Polya's problem solving approach, we identified the nature of the problem in continuous assessment implementation, and then we designed, developed and evaluated three prototypes that resulted in a strategic pedagogy intervention that teacher educators in pre-service teacher education institutions could use to facilitate the implementation of this assessment strategy in classrooms in Malawi, and possibly further afield. These prototypes were tested and critiqued by lecturers at a teacher training college, who were subsequently asked to model the principles of the third prototype in their practice. The emphasis on Demonstrate and Practice in the final model as well as the involvement of the participating lecturers in evaluating the prototypes, resulted in their adoption of the strategic pedagogy into their own classroom practices.

Keywords: continuous assessment; deliberate practice; direct instruction; participatory pedagogy development

Resumen
La implementación de la evaluación continua no es tan simple como parece. Los docentes en Malawi han resistido este método de evaluación, a pesar de ser un requisito gubernamental. La investigación en este sentido ha llevado a la identificación de factores de resistencia como el gran tamaño de las clases, la falta de recursos, la resistencia al cambio desde la tradición antigua, la falta de apoyo de varias partes interesadas y la presión del gobierno para completar el currículo. Aunque los académicos han sugerido formas de mitigar los desafíos que enfrenta la implementación efectiva de la evaluación continua, surge la pregunta de cómo se capacita y prepara a los futuros maestros para implementar realmente la evaluación continua. El marco conceptual de esta investigación se basó en los principios de la Práctica Deliberada y la Instrucción Directa. Utilizando el enfoque de resolución de problemas de Polya, identificamos la naturaleza del problema en la implementación de la evaluación continua, y luego diseñamos, desarrollamos y evaluamos tres prototipos que resultaron en una intervención pedagógica estratégica que los educadores de maestros en instituciones de formación docente podrían usar para facilitar la implementación de esta estrategia de evaluación en las aulas de Malawi, y posiblemente más allá. Estos prototipos fueron probados y criticados por profesores en una escuela de formación docente, quienes posteriormente fueron invitados a modelar los principios del tercer prototipo en su práctica. El énfasis en Demostrar y Practicar en el modelo final, así como la participación de los profesores en la evaluación de los prototipos, resultó en la adopción de la pedagogía estratégica en sus propias prácticas de aula.

Palabras clave: evaluación continua; práctica deliberada; instrucción directa; desarrollo pedagógico participativo

Introduction

In 2007, the government in Malawi introduced a new curriculum referred to as the Primary Curriculum and Assessment Reform in which the focus is on the use of participatory teaching methods and an integration of teaching, learning and assessment, the latter of which was described as continuous assessment (CA). In this form of assessment teachers are expected to gain an insight about the progress students are making during the teaching and learning process, enabling them to provide either remedial or enrichment activities where necessary.

However, teachers have experienced challenges in implementing CA in Malawi primary schools ever since it became mandatory, resulting in compliance for its own sake, not to improve teaching and learning. Investigation in this regard has led to the identification of resistance factors such as large class sizes, lack of resources, resistance to change from the old tradition, lack of support from various stakeholders and pressure from government to complete the curriculum (Chiziwa, 2022). George Polya wrote a little book in 1945 titled, "How to solve it". It has been published continuously ever since and has sold over a million copies (Polya, 2014). He describes four steps in the problem-solving process: identify what the actual problem is, develop a plan to solve it, implement the plan, and then evaluate the solution. This is the process that was followed for this study. In investigating the difficulties in the implementation of CA in Malawi, it became apparent that pre-service training of teachers did not include a clear fit-for-purpose strategy for teaching pre-service students how to implement CA. Thus, the first of Polya's problem solving steps was completed. Polya's next three steps evolved into a strategy that was designed around five sequential stages: plan, present, demonstrate, practice and evaluate. The study was carried out at a public teacher training college in the South East Education Division of Malawi, near Zomba city. During the time data was being collected, the teacher training college had 60 members of staff and 540 students.

Since, as confirmed by Akorede et al (2024), effective teaching methods play an important role in students' academic performance, a strategic pedagogy intervention for CA implementation was deemed necessary, and so three prototypes were developed sequentially, bearing in mind the quality criteria of the design constructs of consistence, relevance, practicality, and effectiveness (Dick, Carey & Carey, 2009). These prototypes were designed, developed and tried out iteratively and collaboratively with five lecturers as participants and the University of Malawi Fine and Performing Arts subject matter experts as stakeholders.

Research Questions

In discussion with the lecturers at the teacher training college, two questions arose: how can the instructional strategies that lecturers use when preparing pre-service teachers for CA be improved and, how would using a strategic pedagogy during instruction actually bring about effective change in lecturers' instructional practices and pre-service teachers' CA implementation in schools? In an attempt to answer these questions, three prototypes for such a pedagogy were consecutively created on the basis of two educational theories: Deliberate Practice (DP) (Ericcson, 2002; 2006; Bronkhorst et al, 2013) and Direct Instruction (DI) (Huitt et al., 2009; Rosenshine,1995). These prototypes were evaluated using the quality criteria as suggested by Kelly (2006) and Nieveen and Folmer (2013).

Conceptual framework

Deliberate Practice (DP) and Direct Instruction (DI) were juxtaposed to constitute a conceptual framework for this study. While DP guided the design of the three protocols, and ultimately the actual intervention, DI provided the phases of the intervention itself.

DP is characterised by four basic structuring principles. The instructional events must be:

Designed for self-improvement,

Repeated for successive refinement,

Providing feedback immediate to enable improvement,

Providing motivation because the event may not be inherently enjoyable and will involve significant effort and concentration.

The transactional model of DI (Huitt et al., 2009) has four phases, preceded by detailed planning:

Presentation

Practice

Assessment and evaluation

Monitoring and feedback

It is nevertheless important to note that repetition and practice do not guarantee expert performance (Hambrick et al, 2013), since other factors, such as innate ability, also play a role (Campitelli et al., 2011). Nevertheless, although DP may not be sufficient to improve performance, it is certainly necessary for such improvement (Campitelli et al., 2011). This implies that the more an individual practices a particular skill under the supervision of a teacher or coach who provides immediate and informative feedback, the more the improvement in the performance of the skill.

For evaluation of the prototypes, the quality criteria as suggested by Kelly (2006) and Nieveen and Folmer (2013) and are expanded and used. These criteria are specific to educational design research. They are: effectiveness and efficiency of the intervention, relevance and consistency, and practicality which also implies feasibility.

Methodology and tools

Data for the design of the prototypes was collected by means of a questionnaire administered to the lecturers and pre-service teachers about knowledge, attitude and practice regarding CA, lecture room observations, debriefing sessions with the lecturers to discuss the observations, and a daylong seminar and interviews with the SMEs. A needs analysis was conducted, which led to the design of Prototype 1.

Design, development and evaluation of Prototype 1

Prototype 1 was useful in identifying potential features of the final strategic pedagogy as an intervention. Findings indicated that the instructional practices of the lecturers were more theoretical than practical with little or no opportunity for the preservice teachers to practice what they had learned about CA implementation. The DI model was modified to ultimately inform the development of the strategic pedagogy intervention. In this prototype, planning was used as the first phase because, as Killen (2009) puts it, one cannot have a successful lesson without planning for it. The second phase was simply captured as "teach", pointing to the presentation of the knowledge and skills used for CA implementation. The third phase, "demonstrate", was designed as a walk-the-talk time in which the lecturer would model the implementation of CA, putting into practice what was expected of the students to do in schools. The fourth phase involved the students being required to practice the content learnt. The last phase was called "evaluate", which also encompassed monitoring and feedback.

Plan

In this phase, the lecturers set goals, describe the teaching strategies to be used, and outline what would need to be done to accomplish the goals. In the process, the lecturers decide what they want to do as well as how and when they will do it.

Specifically, the lecturer would:

- plan the content about CA implementation
- identify the teaching strategies to be used during the lesson presentation
- select, develop and organise the learning experiences
- identify the teaching and learning resources
- create the tasks and lesson activities to be included in the lesson
- decide the sequences of the activities
- decide on what and how demonstration activity will be carried out
- plan the assessment activities as well as the expected responses for the tasks and activities
- practice the task(s) (guided or unguided)
- decide how each of the phases of the instructional process would be evaluated.

Teach

During teaching, including introduction, development and conclusion of the lesson, the lecturer systematically presents an aspect of CA planned to be taught on a particular day and time. In this phase, the lecturer describes, explains, or shows, what the students need to do. During the introduction of the lesson, the lecturers may mention what the lesson is all about; fix the lesson objectives or success criteria; and justify the relevance of the lesson content. Participatory teaching strategies such as role plays and simulations could be used to encourage active engagement with the students throughout the lesson delivery. To attain the ultimate objective of knowledge and skills acquisition and transfer, it is important for the lecturer to

demonstrate to the pre-service teachers both the concepts being taught and how to implement them in an actual classroom setting.

Demonstrate

In this phase, the lecturer needs to model the CA concept taught in the lecture by showing how to implement it. Simply put, lecturers are to enact what they want the pre-service teachers to do when implementing CA now and in future. For example, if the lecturer was teaching a lesson on assessment tools such as a checklist, he/she should demonstrate how to develop one and how to use it. This demonstration could be done in an interactive manner with the full participation of the pre-service teachers. Demonstration should be done side by side with explanations so that the students are aware of the critical points of the demonstration.

Practice

During this phase, the lecturer should switch roles with the students: the lecturers ask the students to practice what they have learned from the demonstration. The practice phase is for the pre-service teachers to have hands-on experience with what they will be doing when integrating teaching, learning and assessment. Where they experience difficulties, the students should be given a chance to reflect why this is the case and identify alternatives. This guided practice is considered essential as "candidates are supported in expanding their responsibilities in the classroom as they gain confidence and expertise" (Hollins, 2011, p. 404).

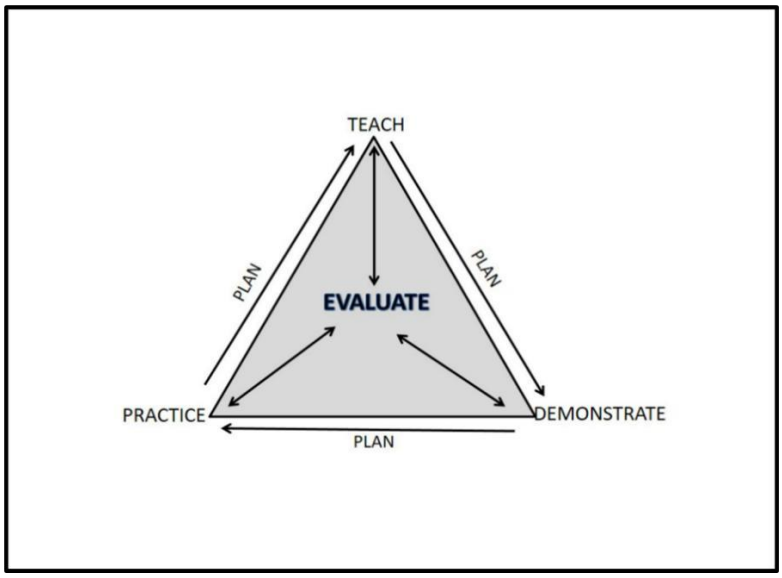
The guided practice should be followed by unguided practice where the lecturer gives the students an activity or activities to practice in a group or individually. This time, the activity should be performed without the support of the lecturer. However, the lecturer should check the progress students are making, noting those who are excelling and those who need support. The lecturer may suggest scenarios of CA implementation in different situations. This phase can be implemented within the lecture or can be done as homework. Practice can also take place at a demonstration school which may be associated with the teacher training college.

Evaluate

Evaluation focuses on how well an activity was done, and how it can be improved. Planning may be linear with evaluation following after planning, teaching, demonstration, and practice. However, in practice, the model is much more dynamic. For example, the lecturer can carry out diagnostic evaluation prior to lecture presentation to determine the knowledge levels of the students, formative evaluation as the phases progress and summative evaluation at the end of the lecture. This may be seen as "reflective teaching" (Killen, 2009, p. 101). Prototype 1 is visually presented in Figure 1.

Figure 1.

Visual representation of Prototype 1



Feedback on Prototype 1

"Collective analysis" (Baztan et al., 2016, p. 139) not only promotes "buy-in" of the participants, but leads to "the achievement of consensus to propose achievable alternatives" (Baztan et al., 216, p. 139). Formative evaluation and feedback of Prototype 1 was carried out with two groups of evaluators. The first group consisted of purposively sampled subject experts from the Department of Fine and Performing Arts at the UNIMA who assisted with the design of the prototype, and a staff member at the teacher training college. All these experts were selected on the grounds of their extensive experience in teaching and assessment, both as school teachers and tertiary college lecturers and were thought to be able to judge the relevance and consistency of the strategic pedagogy. They were asked to critique the pedagogy and offer their constructive feedback regarding the design, lay-out and the suitability of the phases.

The second group of evaluators were the five lecturers who participated in the study during the implementation of the prototypes and the strategic pedagogy intervention itself. They were asked to comment on its consistency with other instructional procedures they used at the teacher training college, as well as its relevance, feasibility and consistency, with a view to promoting buy-in to this pedagogy.

From the feedback, the following findings were noted:

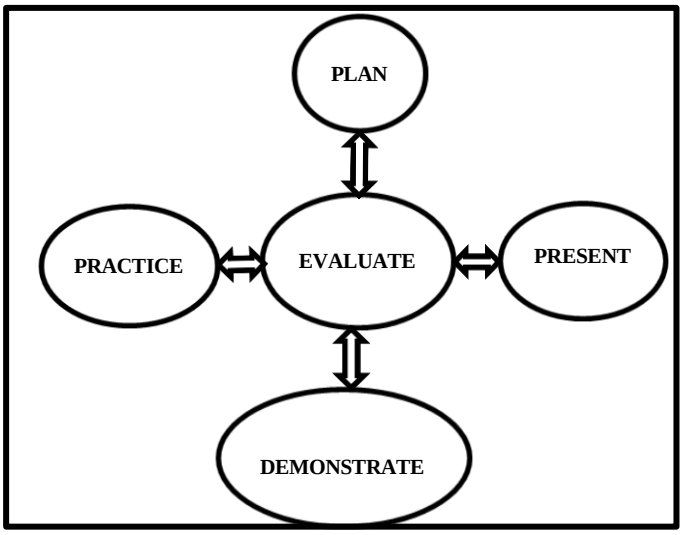
- All the participants indicated that the strategic pedagogy as shown in Prototype 1 was consistent with other instructional procedures as the concepts were familiar and encouraged in any good lesson.
- The participants commended the strategic pedagogy, but pointed out areas that needed to be revisited.
- There was an expressed need for planning to be a conspicuous phase in the strategic pedagogic intervention, and not appear as happening "behind the scenes." The problem lay in the way the model was depicted: it appeared as if planning was taking place after each phase.
- Evaluation, which was in the centre of the model, seemed to be a central feature as portrayed by the double arrowed lines connecting evaluation with each phase.
- The triangular design did not clearly show the cyclic process of the strategic pedagogy. The evaluators suggested using a cyclic design for the model. In addition, the arrows were seen to be somewhat confusing.
- Another concept needed to be found to replace Teach, since all the activities in each phase of the prototype involved teaching.

Design, development and evaluation of Prototype 2

Using the information gathered through the formative evaluation and feedback of Prototype 1, Prototype 2 was designed and developed. The triangular structure of the model was changed by drawing a series of circles that represented each of the phases of the strategic pedagogy. Planning was indicated as a separate phase of the prototype and evaluation was put int the middle with double headed arrows to show that evaluation should take place in each phase. Teach was replaced with Present which implies the actual delivery or the implementation of what the lecturer had planned for the pre-service teachers. The lecturer describes, explains or shows, what the students are to learn.

Figure 1.3

Visual presentation of Prototype 2



Roll-out of Prototype 2

Once Prototype 2 was designed and developed, it had to be tried out and formatively evaluated. Two research participants presented a topic in CA to ten other lecturers who played a dual role of students as well as evaluators or critical friends/peers. Most of the lecturers who attended the presentations had at one point in the research either participated in completing the questionnaire, had their lectures observed or had also attended the debriefing session after the lecture room observations were completed, so they were aware of the purpose of the study.

The participants were told that they were to be "critical friends" and were to focus in their observations on the relevance, consistency, practicality, and efficiency of the strategic pedagogy during the lecture delivery. Since the lectures were each to move through the five phases, plan, present, demonstrate, practice and evaluate, the critical friends were asked to note when each of the phases was being implemented during the lecture delivery. They were also asked to discuss their thoughts on the impact the strategic pedagogy would have on the pre-service teachers' competence and performance in CA implementation in the schools, with a particular focus, as per the criteria proposed in educational design research. The criteria that were discussed as per Nieveen and Folmer, (2013) are relevance (appropriate for teacher education), consistency (not entirely new, but having commonalities with existing pedagogies or teaching methods, so, logically designed), practicality (it is doable), feasibility (it is useful) and effectiveness and efficiency (could be implemented within the allocated time to yield the desired outcome). The critical friends were also asked to comment on the extent to which the presenters were able to implement all the phases of the prototype during the lecture delivery. Each of the two presenters taught in their areas of expertise, but with a view to teaching about CA implementation.

The first lecture featured numeracy, specifically numbers, operations and relationships, and was titled "The teaching of addition". During the actual delivery, the lecturer taught about addition and showed how to assess learners' performance using a checklist which the "students" then developed. The class decided together on the areas that were to be assessed using the checklist. In line with the Deliberate Practice approach, he guided the activities, but at some point, he gave the students unguided practice activity. The lecturer had a formal written lesson plan, unlike the one who taught expressive arts.

The second lecturer presented a lecture in expressive arts. During the lesson presentation the lecturer began with a description of the term CA; its importance in learning assessment and some of the assessment tools that a teacher could use when implementing CA, but the lesson concentrated on how to use a rating scale when assessing learners on a topic "Skills in football: passing". He also explained the meaning of a rating scale, how to develop it, and how to use it. During demonstration an example of a rating scale was presented. Practice was using the rating scale. Finally, the presenter wrapped up the lesson by asking questions based on the content and told the "students" what would be covered in the next lecture as a form of summative evaluation. Despite the absence of a formal written plan, the teaching approach indicated that there was some planning.

Feedback on Prototype 2

During this time, the critical friends commented on the lessons with reference to the presenters' ability to teach following the prototype model and whether it was possible to identify which phase of the model each presenter was at during the lecture delivery. They were also asked to comment if it would be possible to use such an instructional pedagogy in a real classroom setting (expected practicality) at a teacher training college, with associated challenges.

Generally, the participants appreciated the design of the strategic pedagogy and its phases:

"I am particularly happy with the strategic pedagogy because it is not entirely new but places great importance on the aspects that we ignore during teaching." (Critical friend 1).

"I am happy with the practice phase because it will enable the students to have hands-on experience immediately after an instruction" (Critical friend 2).

Regarding the extent to which the strategic pedagogy was relevant, practical, and feasible, all the participants indicated that the strategic pedagogy met all these requirements:

"All the phases in the strategic pedagogy are the ones we expect to see in a good lesson" (Critical friend 4).

There was a unanimous agreement that both presenters were able to incorporate all the phases of the strategic pedagogy in their lessons. As said by one critical friend:

"It was clearly visible to me that the presenter was on demonstration phase and practice phase of the strategic pedagogy" (Critical friend 6).

The critical friends were especially encouraged to observe how demonstration and practice phases were embedded in the model.

These evaluators pointed out problems in the model in terms of its effectiveness timewise. One evaluator summarised the discussion as follows:

"It might be difficult to cover all the phases in a one-hour lesson and also to complete the curriculum as it may take a lot of time during practice".

Responding to how the strategic pedagogy would affect pre-service teachers' ability to implement CA in the schools, the critical friends indicated that if well executed, it would make a real difference to the pre-service teachers' ability to implement CA in the schools. This is an example of a comment:

"The presenters were able to demonstrate how to implement an aspect of continuous assessment. In addition, they gave us an opportunity to practice what we had learned. I feel that the inclusion of demonstration and DP will increase the chances of the pre-service teachers' ability to integrate teaching, learning and assessment in the classroom" (Critical friend 8).

The participants raised concerns about the structure of the model, saying that it was like a "skeleton lacking meat" i.e. information that would assist the lecturers when implementing the model. They expressed the need for an elaboration in the circles of each phase and that they should be linked with each other in the model.

Design, development and evaluation of Prototype 3

The feedback from Prototype 2 led to significant changes being made in the design of Prototype 3. The activities for each phase were described in some detail, and arrows linked the phases which were now presented in circles.

Plan

This phase includes planning for all the lesson content to be taught, the success criteria, teaching strategies, teaching and learning and assessment resources; how the demonstration and practice phases would be done; activities for different types of practice, and the questions/activities that would be used during lesson evaluation.

Present

This entails actual delivery of the lecture. Answers to the what, why and how questions should be included.

Demonstrate

Here the lecturer is to develop either assessment tools or strategies for implementing CA to show them to the pre-service teachers. As the demonstration is taking place, the students observe, or possibly participate in the demonstration. This will depend on the nature of the concept being demonstrated. The focus is for the lecturer to show the what and the how of CA related concepts.

Practice

This implies students trying out what has been taught by the lecturer. It could be in the form of an activity or task, but related to CA. In line with the DI, the tasks could be done initially with the lecturer support (guided practice) and/or without the lecturer's support (unguided practice).

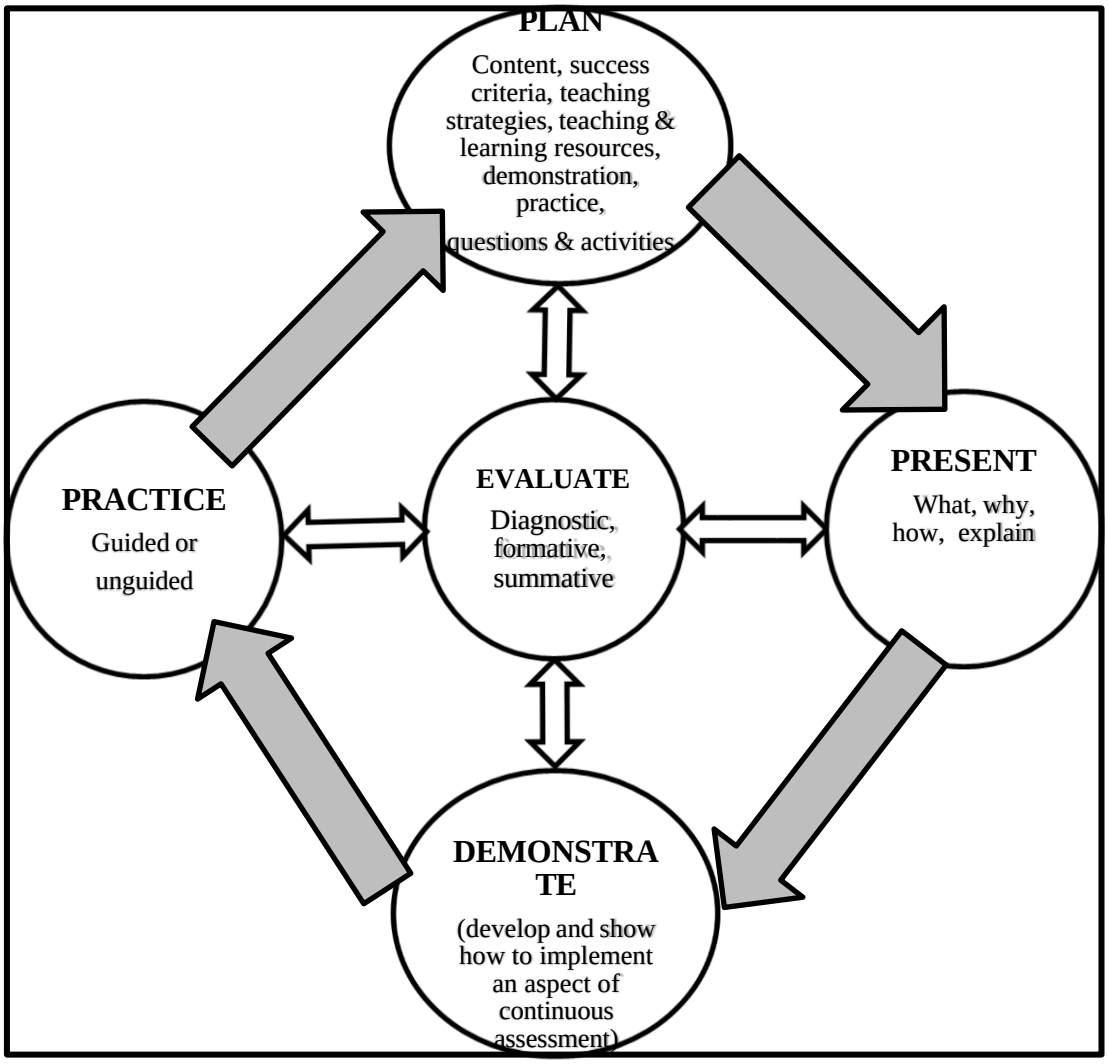
Evaluate

This involves determining the effectiveness of what was taught and how it was taught, and it can be diagnostic, formative or summative, depending on when it occurs.

As can be seen in the figure below, each phase now carries its own description. For example, the planning phase has included the aspects that the lecturer must think about such as the content, success criteria, teaching strategies, teaching and learning resources, what and how to demonstrate, what kinds of practice activities will be carried out as well as how the evaluation will be done. Also, the one-direction arrows depict the cyclic nature of the strategic pedagogy from plan, present, demonstrate, practice, to evaluate.

Figure 1.4

Visual representation of Prototype 3



Rollout of Prototype 3

The research question that guided this phase was how practical and effective the strategic pedagogy was in enabling knowledge and skills acquisition and transfer for CA implementation in the schools. The presentations using the Prototype 3 were in two lecture rooms each containing forty-two pre-service teachers. Only two of the five participating lecturers were able to be involved in the rollout of Prototype 3 for a period of six weeks, although the third lecturer, who had participated in the design, development and formative evaluation of all three prototypes, also gave his inputs during the interviews.

Feedback on Prototype 3

Expected effectiveness was the focus of the summative evaluation, which was conducted by means of interviews. The aim was to determine the practicality and expected effectiveness of the prototype as well as the extent to which the strategy would enhance knowledge and skills acquisition and transfer. Any areas that needed improvement for its effective implementation could also be identified.

The lecturers indicated that the prototype was relevant, consistent, and practical. However, its effectiveness in enabling the pre-service teachers to implement CA in the schools was not determined – instead this was recommended for further research. It was found that the prototype had the potential to improve knowledge and skills transfer to the pre-service teachers' CA classroom practice. The general opinion was that a teacher training college has to prepare teachers to carry out all the work required of them in the classroom. The strategic intervention of which the prototypes and been developed, skilled-up the pre-service teachers as to what, and how they would be implementing CA in the schools.

"It is relevant to be used at a teacher training college because as we are training teachers here, there is no way a teacher can run away from preparation and again there is no way a teacher will run away from evaluation. So, I feel this strategy is very important in the training of teachers" (Lecturer A).

"Aaa …so which means that a teacher really is able as a teacher trainer to teach a concept, and demonstrate it how it is done and give tasks to the students… they have to practice how they can do it in a lesson because we would like them to teach in the primary schools... So how can they do it to make sure that they will be able to evaluate or to know how much learners have understood… what is it that they are able to do. So I find it to be relevant with adequate or proper planning" (Lecturer B).

"You are sure of what you are teaching... And you are sure that the learners are getting the correct information. Rather than just teaching and then evaluating at the end, you have no time to do it. Sometimes you just fill out the schemes as if you achieved what you wanted to achieve" (Lecturer C).

The interviewees concluded that the relevance of Prototype 3 was indisputable and would obviate most problems when it was implemented as an intervention. Its relevance was noted by the inclusion of demonstration, practice and evaluation phases and the attendant explanations.

The practicality of the model

An important aspect of any intervention is that it should not only be relevant but also should be practical (Plomp & Nieveen, 2013; Nieveen & Folmer, 2013). This means it should be feasible or implementable in the contexts it was designed for. In this regard, the lecturers commented as follows:

"All the stages of the [model] are doable. Yeah, they can easily be done in a classroom setting" …So, I would be saying it is practical… And if it is put into place, it might help in the development of the student teachers to become effective teachers in future (Lecturer A).

"Aaaa maybe first of all I should start by saying that personally I feel that it is doable here in the college in the sense that I think as a teacher training institution… we need to be exemplary… we need to be role models in the way we conduct our lessons" (Lecturer B).

"It is usable and a good strategy because…when you are teaching and then evaluating in the process of the teaching, even not at the end but during the course of the lesson itself… and you evaluate the lesson, it helps the learners to get the meaning of the concepts easily and also it helps find out if you are going together with the learners... If learners are getting what you want them to learn, you can easily make corrections where you feel the learners haven't captured the correct information of what you wanted them to get" (Lecturer C).

From the findings above, it can be concluded that the model could be adopted as an instructional approach when preparing pre-service teachers as it was viewed as being "doable", "practical" and "usable".

Consistency of the prototype

Consistency was taken to refer to the extent to which the instructional approach was similar with other instructional procedures the lecturers were familiar with. Responding to the question, the participants said the phases were familiar to them.

"Yeah, personally … I find that it fits well with other strategies. It's not that the strategy is so different from other strategies but only that this is also more emphasising on issues of practice and evaluation. I know that there may be, teachers maybe… during the presentation, they may plan but this particular part where they have to practice and be able as lecturers or teachers

to evaluate… I think it's where I find that there seems to be a gap among teachers or lecturers. Because people find time to allow learners or students to practice and then themselves evaluate to improve the next lesson" (Lecturer B)

"The method is not very different from other methods, it is consistent.

Only that this method is emphasising… all the other methods require

planning…but then even the other methods will also require demonstrating… and demonstrating is a fact in teaching. If you don't demonstrate then you don't expect the learners to get what you want. Just speaking or saying it to them will not be enough. That is where I see this method to be special because it emphasises on demonstrating… and then proceed with the other steps. The emphasis is the one that makes it different. But it is not just unique from the other methodologies. It is only the emphasis on demonstration. It's a must that one has to demonstrate when using this method" (Lecturer C).

So the lecturers confirmed that they were required to enact what they already knew yet had not been able put into practice.

Discussion

It is one thing for an intervention to clearly demonstrate its relevance, practicality and consistency and another thing to be successfully adopted by the intended users. According to Plomp and Nieveen (2013) and Nieveen and Folmer, (2013), effectiveness of an intervention can be both expected and actual. The lecturers were asked if they would recommend use of the strategic pedagogy intervention (SPI) which had been developed through the three prototypes to other lecturers and if they felt that the SPI would impact on the pre-service teachers' ability to implement CA in the schools. The lecturers' answers to this question provided an indication of whether the strategic pedagogy would be adopted into teacher preparation programmes.

The lecturers unanimously indicated that given a chance, they would recommend the SPI to other lecturers at the teacher training college, and some wondered why the SPI was not introduced to all the lecturers at the teacher training college.

"Yeah, I would share with the other lecturers this particular strategy… [they may say that] it already fits very well with the other strategies or there may be others doing it, but they may not know that what they are doing is this particular strategy. Then it will be just a matter of discussing with them how best this particular strategy can work in the classroom… how we can improve it… If all of us (lecturers) could have in mind this particular strategy, so that when you are teaching the students, they are able to see or experience from each and every lecturer that enters the classroom… that is going to deepen their understanding and practicality of the strategy in the classroom" (Implementer B).

Finally, Lecturer A said:

"Yeah. The lecturers are going to welcome that... I see them welcoming that without any problems... Because there is this saying that you should do as I do but [not just] do as I say. So… it is better for the lecturers to adopt this thing of saying you present, you demonstrate, and then let the students practice".

These lecturers also thought that the SPI could improve the quality of the teacher education programme education if properly implemented. They suggested that the SPI has transformative potential.

"If it is put in place, it might help in the development of effective teachers in future …aah it would really help them to implement CA in the schools" (Lecturer B).

The problem that was identified lay in the fact that many lecturers did not know about the SPI:

"…but the challenge is that since not all lecturers are aware of this particular strategy. So, it's like there may be lack of emphasis from all the people that are involved in the training of these particular teachers" (Lecturer B).

From the lecturers' point of view, the SPI was worth implementing by all the lecturers in the teacher preparation programmes. It would be assumed that the practicality, relevance and consistence of the SPI contributed greatly to their views.

Challenges in implementing the intervention

An interesting challenge was encountered in the practice phase of the SP, which may or may not have been culturally based: female students were reluctant to step forward and demonstrate what they had learned about CA.

"The challenges might be there but not many because mostly it was to do with the practice wherein some other classes you would find mainly some learners [students]a little bit shy to do the activity. But in some other classes, you could find most

of the students ready to practice to try out that particular concept that I was teaching. And mostly it was I think these female teachers [students]: some of them were a little bit having some problems to stand in front and practice or try-out that particular concept that I was teaching but on the whole aaah there wasn't a big challenge in implementing it" (Lecturer B).

However, generally, the lecturers found that the model was easy to implement:

"The strategy does not have much problems (sic) because even in normal teaching situation, one needs to plan, and planning will include on how to present. When you are developing the lesson, during planning, you think of how I am going to present the lesson so that it is effective. And some of the things that you look into are the resources you are going to use, how you are going to use those resources, and then how you are going to find out whether the learners have received the information or not" (Lecturer C).

The concern about the unavailability of resources to be used for demonstration was described as follows:

"There were some challenges, yes mostly to do with resources. Because for these methods to work effectively, we must have resources. And the challenge in several situations is that you may not find appropriate materials to use to demonstrate to the learners" (Lecturer C).

Conclusion

The outcome of this study is a model for the implementation of a strategic pedagogy for primary teacher education for effective CA. This model has the potential to help pre-service teachers value the implementation of CA (and determine to use it) by experiencing first-hand what their lecturers are doing during presentation, demonstrations, practices and lesson evaluation.

Commensurate with design research studies, there were several iterations during which a number of prototypes were developed and evaluated. The feedback on Prototype 1 focused on the structure of the model; for instance, that the triangular design did not depict the cyclic nature of the model. In addition to this, there was a suggestion to replace the notion teach with another concept as it was viewed that everything in the model was about teaching. Prototype 2 was found to be relevant, consistent, practical, and feasible. However, there was a need to revisit the structure and to elaborate more on what each phase of the model entailed to guide the prospective users of the model. The summative evaluation of Prototype 3 after its implementation confirmed the relevance, consistency, practicality and expected effectiveness of this model.

Importantly, the collaboration with the lecturers at the research site during the design, development and formative evaluation and feedback as the study progressed from baseline study, intervention and implementation and assessment phases, resulted buy-in by the parties concerned. In fact, the Teaching Practice committee facilitated a seminar on best teaching practices which focused on the phases of the SPI. It was also learned that pre-service teachers' assessment during teaching practice was based on their ability to incorporate the phases of the SPI.

It should be noted that the strategic pedagogy was not developed to be prescriptive, but rather descriptive. Its central tenets are that lecturers in teacher training colleges should present their lectures on issues of CA by deliberately having a session to demonstrate what they teach and allowing the pre-service teachers to practice what they learned. In so doing, the students would be enabled not only to be familiar with the content but also to internalise what they have learned, as well how to put what they have learned into practice.

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