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Efficacy of College Lecturer and Student Peer Collaborative Assessment of In-Service Mathematics Student Teachers' Teaching Practice Instruction

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This study investigated the effectiveness of collaboration between college lecturers and student peers in assessing the instructional practice of in-service student teachers (ISTs). The study was inspired by criticisms that college lecturers' assessments were not producing valid critiques of ISTs' mathematical and pedagogical competencies to implement strategies they learned in their coursework. Case studies of two pairs of ISTs, one pair at a state high school and the other at a private high school, provided data for this study. During their coursework, ISTs learned new pedagogical skills and upgraded their content knowledge. Findings indicate that lecturer and peer assessment of the same lesson taught by an IST resulted in different but complementary critiques. The lecturer's critique highlighted both strengths and weaknesses of a lesson while the peer's critique refrained from pointing out weaknesses of a lesson. An important implication for the findings, in Zimbabwe, is that the deployment of ISTs in pairs for teaching practice may be beneficial to their professional development.

The purpose of this study is to determine the effectiveness of collaborative assessment of in-service mathematics student teachers' classroom practice by both a lecturer and a peer. This assessment occurred during the full-time teaching practice segment of their program in which student teachers were encouraged to implement constructivist-inspired instructional strategies. An in-service student teacher (IST) is a certified and experienced teacher who enters a college-based program of professional study for the purpose of improving their professional knowledge and skills using specific mathematical reforms in pedagogy and content.

Peers are fellow in-service student teachers working at the same teaching practice school. Student teachers acting as peers attended the Bachelor of Science in Education (BScEd) in-service program during the same period. A lecturer is a university mathematics educator who teaches the ISTs during the residential portion of their program. Lecturer-peer collaborative assessment can be viewed as the joint operation of a lecturer and peer in assessing the level to which an IST has developed attitudes, knowledge, and skills to implement constructivist pedagogical strategies in their teaching. In addition, they make suggestions to improve the implementation strategies specific to an assessed lesson.

Constructivist theories encourage the use of learner-centered instructional pedagogies because, from a fallibilist perspective, mathematical knowledge is viewed as context-based. Knowledge is believed to originate from observations, experimentation and abstraction using specific senses and, therefore, is fallible, tentative, intuitive, subjective and dynamic (Nyaumwe, 2004). From a constructivist view, to teach mathematics well is to equip learners with a conceptual understanding of the process skills that enables them to individually or collectively develop a repertoire for developing powerful constructions that concur with viable mathematical knowledge (Davis, 1990).

Lecturer-peer assessment involves a lecturer and a peer simultaneously assessing the instructional practice of an IST, or a peer alone making the assessment for the purposes of formative evaluation. In the absence of a lecturer, peer assessment is still collaborative because a peer acts as a proxy for the lecturer and reports to a lecturer when they meet. Reciprocal peer assessment of lessons is a two-way collaborative process that helps both the peer assessor and the IST generate ideas about how to improve their teaching practices. Collaborative evaluation of an IST's implementation of a

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pedagogical reform is essential in order to identify strengths and weaknesses. If the IST is performing unsatisfactorily, the evaluation can assist in upgrading practice to appropriate standards (Ziv, Verstein, & Tamir, 1993).

Assessment of ISTs' professional competencies during practice teaching is a polemical issue in Zimbabwe. Teacher educators in the country take the assessment as their privileged domain. They lament subjectivity and the propensity toward bias when school authorities get involved in the assessment process. Usually school-based assessments and lecturers' assessments vary significantly (Nyaumwe & Mavhunga, 2005). Despite the assessment differences, Zindi (1996) suggested that schools be involved in the assessment of student teachers. He argued that reliance on a lecturer as the only assessor of student teachers' practice was not fair or valid because several assessors produce more objective assessments of student teachers' professional competencies than a single source.

Mathematics curriculum reform in Zimbabwe encourages teachers to adopt constructivist approaches in their teaching because of the potential of these approaches to enable learners to transfer school mathematics to contextualized situations through modeling and problem solving. Constructivist strategies emphasize (a) linking content to learners' prior knowledge, (b) analyzing and interpreting learners' thinking and understanding, (c) encouraging learner construction of mathematical concepts and negotiations, as well as (d) facilitating multiple presentations of solutions to problems. Constructivist strategies also involve ISTs' abilities to experiment with new approaches that require learners' engagement in well-developed, open-ended, and authentic investigations. In these investigations, learners develop and evaluate conjectures, explain their work, and communicate their results.

Due to differences in learner characteristics and difficulties in effective sampling of instructional skills across the domain of constructivist tenets, arguably, the traditional lecturer assessments of ISTs' professional competencies do not provide a valid measure of the IST's ability to implement constructivist strategies (Watt, 2005). This observation suggests it may be useful to incorporate peers in the assessment process in order to capture a wider range of instructional abilities viewed from different perspectives. The present study was inspired by an interest to explore the relationship between assessment measures from a variety of assessors for ISTs' classroom practice during the student teaching segment of their BScEd program. It attempts to contribute to the debate on this issue by investigating the research question: Does lecturer-peer assessment of classroom practice of ISTs enhance implementation of constructivist-related strategies when teaching?

Answers to this research question could inform local and international discussion on promoting holistic assessment of ISTs' instructional practice. Findings from this study could also have important implications for the deployment of ISTs to teaching practice schools in Zimbabwe and elsewhere.

Conceptual Framework from Theoretical Considerations

When working in cooperative groups, the involvement of peers in the acquisition of procedural and conceptual understanding of mathematical content is well documented (Lowery, 2003; Schmuck and Schmuck, 1997). Watt (2005) suggested that, in Australia, the use of peers to assess each other's work has potential for improving learner mastery of mathematical knowledge and skills. Viriato, Chevane, and Mutimucuio (2005) explored the degree to which peer assessment could contribute to the acquisition of generic competencies of post-graduate science learners in Mozambique. Both studies concluded that peer assessment

> fosters deep understanding, increases learner involvement in the academic life, contributes in the development of reflective skills, increases awareness of a broad range of possible solutions to problems, contributes to the development of self–reliant and self-directed learners, and increases cooperation and social interaction by lessening competition among learners. (Sivan, as cited in Viriato et al., p. 23)

These studies depict peer involvement in learning as having a positive effect because it enhances understanding of subject matter content.

Morrison, Mcduffie, and Akerson (2005) proposed that, when teachers work with peers, the application of new knowledge in appropriate contexts is facilitated by their negotiations of and active involvement in the implementation of the knowledge, and in watching and discussing the efficacy of the implementation strategies used. This is particularly true for the development of instructional skills that develop during active implementation in real classrooms. Putnam and Borko (2000) argue that, in order to construct new knowledge about pedagogical reform, ISTs need to be situated in authentic classroom contexts. Immersion in these

contexts when implementing a pedagogical reform promotes the transfer of theoretical knowledge of the reform to practice. Lecturer-peer assessment of ISTs' implementation of instructional strategies encourages ISTs to study how peers interpret and implement pedagogical reform. Well-organized peer assessments might not only focus on peer understanding of instructional theory and practice but also enhance the development of a repertoire of professional skills through explanations, justifications of claims, and communication with peers during post-lesson reflective dialogues.

The use of peers in a learning environment has been documented as beneficial to the development of a deep understanding of what peers and ISTs learn collaboratively (Watt, 2005; Viriato et al., 2005). Peers have the potential to expose each other to reform strategies and techniques, share personalized strategies and techniques, and collaborate in the evaluation of implementing a pedagogical reform. Spector (1999) recommends having ISTs sit in peers' lessons in order to help each other to better understand and apply the theories of a reform and implement them in their teaching.

Context of the study

In-service education is an individual teacher's personal initiative in Zimbabwe. There are numerous motivations for embarking on in-service training. Teachers who obtained certificates or diplomas in education from a teachers' college are qualified to teach middle secondary school mathematics. For those teachers to teach high school mathematics, increase chances for promotion, or get a higher remuneration, they must enroll in a full-time undergraduate in-service program at a state or private university (for more information on the Zimbabwean educational system, see Appendix A). The Ministry of Education, Sport and Culture of Zimbabwe supports that initiative by granting two-year leaves of study to tenured teachers.

This study focuses on mathematics ISTs enrolled in a science education program at a state university located in the northern part of Zimbabwe. To graduate with the BScEd degree from this university, an IST has to pass 24 content courses in mathematics and complete a dissertation, a practicum, and four professional courses in education and mathematics pedagogy. The ISTs enroll in six mathematics content courses per semester that are also offered to preservice undergraduate majors. They study all of the mathematics content courses in the undergraduate program in order to meet the certification requirements of the BScEd degree offered by the university.

The ISTs enroll in one professional course per semester separate from the preservice undergraduate students. The ISTs are exempted from some undergraduate education courses under the assumption that they possess sufficient knowledge and skills acquired during their initial training at a teachers' college. The program has more content than pedagogy courses because it is assumed that the ISTs already have a pedagogical base and that they need to transform it into a learner-centred orientation so as to facilitate the implementation of constructivist instructional strategies in their teaching. After completing the Advanced Pedagogics course, the ISTs participate in four weeks of teaching practice in between semesters of the program's second year. The goals of the Advanced Pedagogics course are that in-service students develop (a) a theoretical framework for teaching mathematics at the high school level, (b) a repertoire of constructivist theories for teaching mathematics, (c) favorable attitudes toward mathematics and mathematics teaching, (d) an understanding of the importance of modeling and problem solving in a context accessible to the learner, and (e) the ability to apply the knowledge and skills acquired in the course.

ISTs that pass all prerequisite courses for the teaching practicum independently look for and select schools for this experience. Schools accept ISTs after agreeing to the conditions that ISTs teach under a qualified cooperating teacher for four weeks and that they observe classes taught by their cooperating teacher as well as other teachers in the mathematics department. The participants in this study were deployed within a 200 km radius of the university.

Method

A convenience sample (Watt, 2005) from a cohort of 22 ISTs was used for data collection. The only criterion for sampling was attendance of at least two in-service mathematics student teachers at the same high school. Both high schools that met the sampling criterion were located in an urban setting.

In the first visit by a lecturer, a common understanding of lecturer-peer assessment was made by reviewing the previously described characteristics of constructivist-inspired pedagogies in vogue at the university. The lecturer-peer assessment was meant to be formative rather than summative. To achieve this goal, the assessments were made on the basis of each assessor's personal impression, understanding, and

perceptions of constructivist tenets. In addition, the assessors were free to consult the constructivist pointers on the official classroom observation instrument used by the university (see Nyaumwe & Mavhunga, 2005, for the instrument). Assessors were encouraged to use their personal understanding of constructivist instructional strategies since a standard assessment instrument may force them to focus on a uniformly restricted sample of instructional skills.

Two lecturer-peer assessments of lessons taught by each of the two peers, making a total of four lessons, were made at each of the participating schools. To increase the reliability of the assessment process, participants conducted multiple assessments of the lessons before data collection. After reaching a common understanding on how lessons could be assessed, the lecturer and peers made independent assessments.

A lecturer and a peer sat in the same lesson delivered by an IST and produced individual lesson assessments. Each assessor took detailed notes of classroom episodes. These notes were used in the post-lesson reflective dialogues to pose and support assertions made during lesson observation. One copy of the written field notes was given to the IST who taught the lesson in order to facilitate personal reflection. Another copy was given to the lecturer, who was also the researcher, for the purposes of this study. The post-lesson reflective dialogues were audio taped and later transcribed. The assessed lessons were typically 70 minutes long.

The researcher interviewed each student teacher pair separately at the end of the four-week school attachment to determine the professional benefits gained from the lecturer-peer assessment.

Data were analyzed by interpretative and analytic induction (Bogdan & Biklen in Morrison et al., 2005) by judging the extent to which the instructional practice was commensurate with constructivist instructional strategies. Similarities and differences between the instructional practice and constructivist perspectives were evaluated and recorded on assessment critique forms.

Results

A written critique from James and Elizabeth[1], student teachers attached at the government school, and an excerpt of an interview of Beaven and Munashe, student teachers based at the private high school, are used to provide evidence of the efficacy of lecturer-peer assessments.

Results from Written Critiques

The critiques written by the lecturer and a peer on the performance of an IST's instructional practice highlighted some similarities and differences. The following written critiques of a lesson taught by James involving arithmetic and geometric series serve as examples of the lecturer-peer assessment data produced during the study. Throughout the critiques below, the IST's instructional actions are described by the assessor verbatim, whereas the assessor's interpretations of instructional actions using constructivist tenets are presented in brackets. The lecturer wrote the first critique:

> The introduction was on the conceptual meaning of arithmetic and geometric series. The learners were asked to provide the definitions and formulae for the nth terms and sums of an AP and a GP. [Learners' previous knowledge was determined in the introduction of the lesson]. Learners were later asked to solve problems on work cards in groups of between 3 and 5 each. The learners were encouraged to solve the problems on the work cards using six pre-determined steps of comprehension, identification of variables, the question/task, rule to use, making substitutions and solving the equation. [The idea of using groups was good to enable learners to socially invent their solutions but group sizes were too large for meaningful learner trial and error and negotiations of solution methods. The provision of several tasks on a work card catered for learners' individual differences by outcome. The pre-determined steps given for learners to use as guide to solve the problems reveal the IST's formalist conception of mathematics learning where 'correct' answers are obtainable from using formal rules, procedures or formulae].
>
> The tasks on the work cards were thought provoking for example, suppose $\theta + \Phi + B + \Omega + \ldots$ is an arithmetic progression with a common difference □, find S_4. [This and similar problems required more reasoning and understanding than direct application of a formula. One can conclude that they were more of problem-solving than consolidation exercises].
>
> The IST went round the classroom to listen and assess learners working in groups. [It can be assumed that he evaluated learners' comprehension and how they were solving the problems]. Group work was concluded by highlighting the steps that can be taken when finding the solution for number 4 that read "the third term of a GP is 8 and the fifth term is 32, find S5". [Instead of the IST using a question and answer session to formulate the simultaneous equations and subsequently finding

the values of the first term, a, and common ratio, r, different groups should have presented their solutions on the board. This was going to allow the emergence of possibly different solution strategies that might provide similar viable values for S5].

The assessment made by a peer of James for the same lesson is as follows:

> There was a good use of learners' prior knowledge by asking the nth terms and sums of the arithmetic and geometric progressions. [Learners' current knowledge was linked to new concepts to be developed in the lesson. This enhances building of new concepts on knowledge existing in learners' memories]. Learners' interests were aroused by asking them to come to the board to write the formulae for sums and terms to nth terms of arithmetic and geometric progressions. The learners were asked to explain the formulae that they wrote on the board. [Probing of learners' responses to ascertain their current understanding of the formulae was appropriate. It assisted James to ascertain learners' current understanding of arithmetic and geometric formulae].
>
> The progression of the lesson was logically arranged from the known - formulae of AP and GP - to the unknown - application of the formulae in novel questions in groups. [James utilized learners' prior knowledge. This was revealed by the formulae they recalled for solving problems on work cards].
>
> James used various methods to solicit learners' understanding such as verbal, written work on the board and in groups and listening to group discussions. [James continuously evaluated learners' understanding from time to time during the lesson]. James encouraged learners to debate their solutions, for instance, when formulating the simultaneous equations on the problem on GP. [Debating and negotiating viable solution methods characterized the norms of James's instructional practice].
>
> The tasks on work cards were challenging and generally they suited the competence levels of learners. James was confident and knowledgeable of the content under review. [The work covered in the lesson catered for learners' individual differences because it seemed to suit their cognitive levels. Teacher confidence and knowledge are prerequisite for successful instruction].
>
> Though there were some elements of noise and movement of learners in the lesson, they were justifiable as they facilitated discussions and verifications of learners' current understanding with peers in different groups. [Learner-centered lessons are necessarily characterized by disagreements in the initial stages that lead to learner negotiations and finally to a consensus. Some element of noise and movements are permissible as learners consult, verify their conjectures and explain to each other what they think is viable and justifying their decisions].
>
> James interacted with the learners individually, in groups or at class level during presentations on the board. [High teacher-learner interaction is recommended for teachers to be aware of learners' current thinking, understanding of concepts and using it to develop new concepts].

Although the lecturer and peer's critiques are based on the same lesson, they highlight different constructivist pedagogical skills evident in an IST's instruction. For instance, the lecturer did not comment on the IST's pedagogical and mathematical competencies, but the peer highlighted them as important to determine successful implementation of constructivist instructional strategies. IST mastery of content is critical because a knowledgeable teacher anticipates alternative conceptions and solution strategies by learners. Whereas the lecturer expected learners to present their group work solutions on the board as a way of soliciting multiple methods for finding a solution of a problem, the peer highlighted learners' movement in the classroom during group work. Both the lecturer and the peer concurred on highlighting differentiation as a constructivist tenet exhibited by James. The peer's critique specifically refrained from pointing out weaknesses in James's implementation of constructivist instructional practice.

These critiques demonstrate that the peer did not identify weaknesses in the IST's practice. Peers, in general, were hesitant to identify weaknesses of a lesson because they perceived such criticisms as more summative than formative. In addition, the peer identified constructivist tenets that were not identified by the lecturer and vice versa, providing complementary assessments.

Results from Interviews of Student Pairs

Both pairs of ISTs hailed lecturer-peer assessments as a major benefit of teaching practice with peers. The personal experiences described by Beaven, one of the ISTs involved, were similar to those echoed by other peers:

> The collaborative lecturer and peer assessment gave me a great learning experience. The lecturer and the peer looked at different professional competencies in the same lesson. The use of episodes from the lesson during post-lesson

> reflective dialogues and the constructivist/ absolutist theory that explains it from the understanding of a peer and a lecturer provided me with a wide perspective of how a teaching episode can be a point of focus for one assessor and a trivial event to another. Though my peer was a novice in the area of classroom assessment he provided constructive critiques to the lessons I taught.

The joint assessments enabled the ISTs to gain insight into the interplay of curriculum goals, school contexts, content, learners, the learning milieu and the constructivist/absolutist instructional strategies they learned during teacher education coursework. The lecturer-peer assessments and subsequent post-lesson reflective dialogues exposed the ISTs to new strategies and techniques of implementing constructivist instructional strategies. Discussions in the post-lesson reflective dialogues provided peers with a wide range of interpretations of their instructional practices. The suggestions made during these dialogues enhanced IST understanding of the implementation strategies that promote learner understanding.

Based on the interview excerpt and lesson assessment critiques, the lecturer-peer assessment enhanced ISTs implementation of constructivist-related strategies when teaching mathematics during their teaching practice.

Discussion

Findings from this study indicate that the use of lecturers and peers to assess ISTs' implementation of instructional strategies is beneficial to the development of their professional skills. While simultaneously assessing a lesson, a lecturer and a peer focus upon and interpret instructional actions differently because their individualized beliefs and values about teaching and learning are filtered through personal frames. For instance, Munashe applauded Beaven for stating the objectives at the beginning of a lesson as a motivational strategy, while the lecturer perceived it as a way of enabling learners to understand the sequence of the lesson.

Joint assessment of a lesson involves a lecturer and peer using individualized perceptions of an instructional episode. The complexity of these individualized perceptions make it impossible for any two evaluators assessing the same lesson to see and interpret the professional competencies in the same way, even in the presence of an agreed common instrument. Fortunately, any differences in the assessments highlight complementary teaching skills which, when combined, provide a synergy of an IST's pedagogical competence to implement desired strategies.

Teaching mathematics is a complex interpretive process that depends on the context of the learning environment, nature of content, learner interest, school ethos, and curriculum goals, among others. Based on this complexity, the pedagogical competencies of an IST do not rest on a universally "accepted set of facts, rules and assumptions" (Steele, 2005, p. 295). The pedagogical competencies are not static to allow the use of predetermined indicators as they vary in response to learner needs. Learner behaviors and a teacher's interpretation of the learning environment makes teaching vary from one moment to another, making replication of a teaching episode impossible (Steele, 2005; Wilson, 2003). Lecturer-peer assessment liberates IST assessments from the personalized beliefs and expectations of lecturers. As it bases assessment on a variety of opinions, helping ISTs to explore a variety of pedagogical ideas, lecturer-peer assessment might, in turn, enhance their implementation of desired pedagogical practices.

The use of one source of assessment data on ISTs' classroom practice is not adequate because teaching mathematics is an interpretive act (Steele, 2005) that depends on an individualized area of focus. Because there are no clearly defined rules for assessing pedagogical competencies, assessment of ISTs' instructional practice is conducted with the cooperation of different sources of players. Multiple assessors are necessary because teaching is an interpretative act and assessments are conducted using a frame that is contextualized and individualized. Multiple sources of assessment data on the instructional practice of ISTs might facilitate an understanding and development of instructional knowledge and skills (Peressini, Borko, Romagnano, Knuth, & Willis, 2004).

Involvement of peers in assessment has motivational and cognitive merits. From a motivational perspective, peer collaborative assessments contribute to feelings of control regarding how the ISTs learn, gain confidence, and understand how to implement constructivist instructional strategies in their teaching. In the post-lesson reflective dialogue, a peer and a lecturer identify an episode from the assessed lesson and use personalized understanding of constructivist tenets to interpret it. The interpretations and explanations of an instructional episode lead to a discourse. Discourse on pedagogy provides opportunities for peers and the lecturer to reflect, make and defend claims, exchange alternative perceptions,

and negotiate a consensus that can be generalized to instructional practices of other concepts.

For instance, in a problem-solving task, Elizabeth asked learners to share 17 cattle in three groups, consisting of ½, ⅓ and 1/9 of the cattle, respectively. The learners shared the cattle and obtained 8.5, 5.7 and 1.9 cattle, which they rounded off to 9, 6 and 2. In the post-lesson reflective dialogue the lecturer and James questioned the reasonability of a non-integer quantity of cattle. They argued that the approach caused the mathematical results to become abstract and meaningless. A logical way of approaching the ratio problem that maintains realistic mathematical results was to make a total of 18 cattle by borrowing one cow and adding it to the 17 that were available. Eighteen cattle can be shared evenly using the fractions ½, ⅓ and 1/9 and the borrowed cow can be returned after sharing.

Further discussions on the problem revealed that, by rounding off results, learners could obtain viable answers from flawed reasoning. Logical reasoning is an important skill in the mathematics curriculum that learners should be given opportunities to develop. Arguments, like the one in the post-lesson reflective dialogue, have potential to deepen ISTs' practical and theoretical understanding of constructivist instructional strategies in ways that might enhance learner achievement. For the purposes of formative evaluation, the use of peers to complement lecturers' assessments of ISTs is a viable initiative for producing a holistic picture of their classroom practice.

Lecturers expose the pedagogical strategies that they wish ISTs to implement in the classroom, making them pursue similar strategies. In contrast, school authorities may need training in order to understand these strategies that ISTs are required to adopt. A lack of coherence between the university and schools enables school authorities to emphasize teaching skills that are in conflict with those encouraged by lecturers (Nyaumwe, 2001; Nyaumwe, Mtetwa & Brown, 2005).

Reliance on lecturer assessments of teaching practice has been justified on the grounds that lecturers were perceived as impartial and that their assessments would maximize reliability and ensure comparability of ISTs' attained instructional competencies. This belief devotes most of the "investment in assessment on certification and accountability to the neglect of formative evaluation" (Black, 1998, p. 812). An influential reason for Zimbabwean teacher educators' resistance or indifference to allowing other forms of school-based assessment is that they regard them as highly subjective (Nyaumwe & Mavhunga, 2005).

The peer's assessment in this study did not critique the ISTs' lesson delivery because it was perceived as summative rather than formative evaluation. Peer assessments may not be valid for summative evaluation where assessments are used to rank students according to ability, certification or accountability purposes. This study did not attempt to assess peers' ability to evaluate each other's instructional practices because it was concerned with formative evaluation only. The extent to which peers' evaluations are valid might form the focus of another study. The view of lecturers as the sole assessors and evaluators of ISTs' classroom practice in Zimbabwe is held at the expense of validity because lecturers' assessments may mask some weaknesses in implementing desired instructional practices.

Findings from this study have shown that the lecturer-peer assessments are effective for the purpose of formative evaluation of ISTs' instructional practice. Debates among Zimbabwean educators on whether or not to adopt this model of assessment might be informed by their preference to prioritize formative or summative evaluation. One case study cannot amplify all the merits and demerits of the lecturer-peer assessment phenomenon and the variables that might influence its success. A similar study on preservice student teachers might be useful in order to begin to see the phenomenon in a wider frame.

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[1] Pseudonyms are used for moral and ethical reasons to protect the identities of the participants.

Appendix A

Table A1

Levels of Formal Education in Zimbabwe

Student Age	Education Level	Required Teaching Credential
3–5	Kindergarten	
6–12	Primary	
13–14	Secondary: ZJC	
15–16	Secondary: ‘O’ Level	Diploma: Teachers’ College
17–18	Secondary: ‘A’ Level	Diploma: Teachers’ College
19–22+	Tertiary (Undergraduate)	Degree: University

Note. ZJC = Zimbabwe Junior Certificate, ‘O’ Level = Ordinary Level, ‘A’ Level = Advanced Level. Candidates who pass ‘O’ Level but fail to enroll in ‘A’ Level or who pass ‘A’ Level but fail to enroll at a university may study for a diploma in teaching at a teachers’ college. Those who pass ‘A’ Level and enroll at a university may study for an undergraduate degree program..