Transforming Selection of Literature Set-Works Markers Through Technology

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Abstract: English First Additional Language is a gateway subject as well as a language of learning and teaching to most learners in South Africa. It is marked externally in final National Senior Certificate examination. Manual methods are used to select markers in this examination in some provinces in South Africa. It is assumed that subjectivity, unfairness and lack of transparency can prevail during selection processes. This constructivist study analyses secondary documents on the current marker selection and appointment methods in NSC examination, identifies challenges and recommends computer testing model for selection and appointment of markers in English First Additional Language with special reference to Literature set-works Paper. It thus promotes motivation to use Information and Communications Technologies, reliability in marking, cost effectiveness, transparency, fairness and self-efficacy. Sufficient literature recorded loopholes in marking of National Senior Certificate Examination, but studies on the selection of competent Literature markers is scanty. Undergirded by self-efficacy theory, this study employed the qualitative research approach, to analyse the selection and appointment processes in National Senior Certificate examination, towards the development of a constructivist way to using computers in application for marking.

Keywords: Information and Communications Technologies, Literature set-works, self-efficacy, Marking, National senior certificate

1. Introduction

Marking of National Senior Certificate (NSC) in South Africa (SA) is a yearly undertaking in November/December done within the period decided by (DBE, 2014). Positions ranging from markers, senior markers, deputy chief markers, chief markers and internal moderators (DBE, 2012: Section 6.2.3d) are filled according to the criteria for selection as specified in the Personnel Administrative Measures (PAM) (DoE, 2003) as per the following requirements: a recognised three years' post school qualification which must include the subject concerned at second or third year level or other appropriate post matric qualifications; appropriate teaching experience at the appropriate level in the subject concerned and language competency with preference given to serving educators who teach the subjects concerned. Marking of NSC is viewed as one of the quality processes in SA since this exam takes up to 75% of the promotion mark (van Wyk, 2016), it is an exit grade in the DBE phase and entrance into higher education (Govender & Moodley, 2012) and a yardstick for judging education in SA (Christie, Butler & Potterton, 2007). For the examination to meet quality, competent markers are required in all subjects to execute reliable marking. However, even though marker competency is seen as a priority, selection and appointment of markers in SA seems controversial and unclear (van Wyk 2016:3-4). For instance, markers are appointed without the necessary subject competency (Beeld, 25 April 2012:15, in van Wyk, 2016); teacher unions influence the selection and appointment processes (Daily News, 2 July 2010:5 in van Wyk, 2016) and some DBE policy criteria for selection and appointment are not clear. The following examples bear the significance: Firstly, language competency is listed as one of the criteria for marker appointment. It is, however, uncertain what is meant by language competency (DBE, 2014). South Africa has eleven official languages offered in schools with two languages, Afrikaans and English used for teaching and learning after grade 3. It is not clear which language teachers must be competent in in order to qualify to mark.

Secondly, teaching experience in a particular subject is indicated as another criterion (DBE 2014, in van Wyk, 2016). One might be having experience in teaching, but still lack subject content knowledge due to changing curriculum, especially in the subject like EFAL Literature which is regularly changed.

Thirdly, markers are appointed to reach equitable ratios based on race and gender (van Wyk, 2016). (van Wyk, 2016) warns that reference to equity

does not recognize markers' merit and this can compromise marking reliability because it emphasizes equity and not considering quality. Lastly, and above all, DBE suggested and earmarked for the implementation of competency tests for application for marking in 2013, but to no avail. Western Cape Education Department (WCED) is one province that heeded to the call (Mail & Guardian 15 October 2014: online; News South Africa 26 October 2015: online). DBE (2012:44) reports that the WCED had since from 2011 administered the competency tests based on the curriculum for the NSC subject or paper and the marking skills appropriate to that subject. Concerning English, English Home Language, examined curriculum content of Papers 1, 2 and 3 combined and no provision made for EFAL papers in general and Literature one in particular. This study analysed selection and appointment of markers in EFAL with special reference to Literature setworks Paper, commonly called Paper 2 or Literature (henceforth, Literature) to develop steps to select and appoint markers using computer which has been overlooked even by the practicing province. In the context of marking, thus study views the aim of a competency test as to test the subject knowledge and skills (competency) required to mark in NSC.

2. Theoretical Perspective

Self-efficacy is a major component of social cognitive theory grounded in the assumption that people are agents of their own actions (Bandura, 2001 cited in Farah, 2012). Although notions of teacher development conform to the constructivist paradigm, (Fung, 2000), it requires teachers' dedication and willingness to reconstruct their knowledge and skills. Social cognitive theory thus combines motivation and constructivist thinking (Farah, 2012) considering that efficacy involves one's perceived ability best measured when in relation to a specific context or task and involves one's own perceptions (Bandura, 2001, in Farah, 2012). This study is thus undergirded by constructivism which is both about the acquisition and origins of knowledge, and the pedagogy (Kwan & Wong, 2015 in Mlambo et al., 2020). The researcher concurs with Mlambo et al. (2020), that constructivist learning, and perhaps teaching promotes cogent judgement, critical thinking and conscious reflection which can be enhanced by ICT self-efficacy. In fact, teacher self-efficacy has to do with teachers' confidence in their knowledge and ability to influence student learning (Stein & Wang, 1988) hence it is believed to foster constructivist thinking.

Constructivism, basically, advances the perspective that people (re)construct knowledge for themselves as they attempt to understand their environment (Bailey 2018:177). For 21st century teachers, it serves as a self-belief construct that determines their level of confidence to engage among others, in technologies that support teaching (Mlambo et al., 2020:2). According to Bandura (1997, cited in Mlambo et al., 2020:2) the conceptualisation of ICT self-efficacy beliefs is affixed to these self-beliefs. ICT self-efficacy can therefore be defined as an individual's self-perception of their own capabilities and competency to use ICTs effectively to perform academic tasks successfully, with confidence (Mlambo et al., 2020). The higher levels of educators' ICT self-efficacy, the better use of ICTs, (Siyam, 2019, cited in Mlambo et al., 2020). The lack the confidence to carry out instruction that targets such skills, teachers' efforts to use ICTs will be in vain (Farah, 2012). Research however, showed that most South African educators often lack the confidence to integrate with ICTs (Chigona & Chigona, 2010). The current study proposes a model to influence ICT self-efficacy, with special reference to the completion of computer based competency test by potential markers of EFAL Literature Paper.

3. Research Design, Methods and Procedures

The researcher utilised the qualitative research design by undertaking documentary analysis in the constructivist philosophical standpoint (Adom, Yeboah & Ankrah, 2016). Document analysis was employed for provision of background information and context on the phenomena (Bowen, 2009:30) namely; selection, appointment and competency of markers. Both printed and electronic materials in the form of institutional reports (DBE reports, Umalusi reports), media (newspapers), journals, government publications, application forms, and books were reviewed and analysed (Merriam, 2009) to elicit meaning, get understanding, and develop empirical knowledge. Documents were carefully selected, read, re-read and reviewed thematically analysed, to uncover themes about pertinent phenomena (Bowen, 2009) and concepts like Literature, marking, appointment, competency, and ICT self-efficacy. Much sufficient detail and explanation about the topic was hence given for transferability and confirmability was upheld by showing how findings of this research are confirmable by others (Bisman & Highfield, 2012).

4. Literature Review

4.1 National Senior Certificate

The National senior certificate (NSC), commonly referred to as "matric" is a school-leaving certificate in SA which was known as the Further Education and Training Certificate, replaced the Senior Certificate since 2008 (DBE, 2016). This grade does not only signify the zenith of twelve years of formal schooling, but it measures the effectiveness of education system in SA (DBE website). It defines learners' chances on further education opportunities and labour-market prospects (Spaull, 2013). In this grade, learners offer at least seven subjects, including two compulsory official South African languages which both include Literature sections.

4.2 Literature

Literature is a complicated concept to define due to its cultural, temporal and functional stature (Van der Walt, Evans & Kilfoil, 2009; Emsley, 2017). When it is literally translated the word *literature* means "acquaintance with letters," from the Latin term *littera*, which means letter (Martina, 2009:3). In this paper Literature refers to prescribed literary works studied in further education and training (FET) phase, which is also known as Paper two or Literature set-works. It comprises works of poetry, novels, short stories and plays. Literature provides readers with opportunities and pleasure about life because it tackles all facts of human concerns, emotions, behaviour and dreams (Martina, 2009:05). The intention of Literature is to inspire learners appreciate reading and to explore how the elements of different genres are written and understood (DBE, 2011). However, the versatility of Literature makes it difficult to teach and assess due to its abstract language (DBE, 2011).

Literature is nationally administered in the form of external examination around October/November in SA. The policy that governs teaching and learning, namely, Curriculum and Policy Statement (CAPS) announces that formal internal assessment and external assessment must be administered at 25% and 75% respectively (DBE 2011). Learners are also supposed to respond to only two literary texts in such assessments. According to CAPS EFAL (in DBE, 2011:32) learners must be able to read, evaluate and respond to the aesthetic qualities of each literary text's distinctive elements of figurative language and rhetorical devices for both school and high stake assessments. Nevertheless, the report on the quality assurance of the NSC (2015), revealed that markers in EFAL Literature are not familiar with all the genres (Umalusi, 2016). Teachers who mark in the external NSC examination are the teachers who teach the same paper. It becomes scary if teachers, who are supposed to be experts in the teaching and assessing of the paper, show incompetence in marking in high stakes assessments.

4.3 Information and Communication Technology

Marking Literature, or any other subject, requires competent teachers' 21st century skills. Markers should not only delve in content knowledge, but also be expected to show technical skills in the effective use of technology for knowledge and instructional development. ICT offers greater opportunities to access learning and redress inequalities as in White Paper on e-Education (Dlamini & Mbatha, 2018). Teachers should acquire digital fluency and pedagogies in this advent of fourth industrial revolution for improved teacher and learner performance. SA has invested massively in ICT in education; however, the country is still struggling with issues of professional teacher development in ICT (Dlamini & Mbatha, 2018). It is advisable to "facilitate greater willingness to incorporate changing technologies as they emerge" Buckenmeyer (2010, in Dlamini *et al*., 2018:19) to gain these relevant skills and competencies (Bodilenyane & Mooketsane, 2019). Hence this paper suggests application of computer-based competency test (CBCT) as a prerequisite for selection and appointment of Literature markers. It stresses that marking selection through CBCT will assist to address aspects of content knowledge, advancement of technology and development.

4.4 Marking

Gafoor, (2014, in Gurbanov, 2016:82) defines 'marking as a system which assigns a numerical score, used for evaluating and reporting achievement in students' work in schools. Marking reliability (MR), instead is a measure of agreement between the mark awarded and the mark that should have been awarded" (Wheadon & de Moira, 2013, in Kasowe, 2014:44). De Moira (2011, in Kasowe, 2014:44) intensifies that involving many markers per script is one way of achieving MR nonetheless it requires competent markers to execute quality results.

4.5 Tolerance Range

Tolerance range (TR) is one critical aspect in the marking processes to ensure compliance with standardisation for Literature paper. The use of tolerance recognises that there may be legitimate differences in professional judgment when marking, so it is a way to standardise marking. The TR can thus be described as "the agreed deviation between the markers score and the moderators score" (www.education.gov.za). Generally, only a 2 to 3% deviation between the marker and moderator is tolerated or else the scripts are returned for remarking (www.education.gov.za). It is questionable if markers and moderators will ever reach an agreement if some are rendered incompetent in Literature content knowledge (Emsley, 2017).

5. Results and Discussion

The findings reveal that manual methods of selecting and appointing markers are applied by many provinces in SA. The researcher utilised the thematic data analysis technique based on secondary data by probing into the ways markers are selected and appointed, the use of competency tests and impediments in quality selection and appointment. The categories that denote themes thereof were clustered together. The results are presented as follows:

5.1 Duplication of Duties

Marking process does not end in the hands of markers, but subjected to further rigorous processes to assure quality by senior markers, deputy chief markers, chief markers, internal moderators, external moderators and Umalusi, the national quality assurer. Such duplicated processes, can be exorbitant which can be curbed by appointing competent markers. It is assumed that with numerous markers involved, irregularities may occur. For example, in 2014, Umalusi (2014b:57) advised that memorandum discussion meetings in the African languages, FAL, HL and SAL, should not be arranged in the same time slot since a massive waste of time and money, because internal moderators and chief examiners had to be at different venues at the same time. Additionally, Umalusi officials have highlighted with great concern evidence of shortage of markers in key subjects with high enrolments at the time of the audit in the EFAL in one province (SAnews.gov.za, 2019). In some provinces, teachers are appointed at the examination centres, as scribes and readers

during the examinations which can worsen shortages, which endlessly affect markers' efficiency. For example, DBE (2019:91) announces that senior markers for EFAL Literature Paper were involved in heavy administration work at the one marking centre during 2018 marking session.

5.2 Unfair Selection

Policy stresses that Literature must be marked by grade 12 teachers. This paper argues that the criterion can disqualify other teachers even though they can be competent in Literature content. For example, in 2013 teachers who had not applied as markers, some retired, received appointment letters in one province in SA (Anthony, 2013). A senior high school teacher with experience in matric marking in that province echoed that markers were appointed to jobs because they were friends of those selecting markers (Anthony, 2013).

5.3 Non-Compliance when Applying

According to The Mail & Guardian (2014: online) the chief executive officer for Umalusi emphasized that qualifications, teaching in grade 12 and producing good results are the prerequisites for being appointed as a marker. Nevertheless, when conducting the audit during marking, Umalusi found that the submission of the required qualification transcripts and statistical information on applicants such as the previous years pass percentage in the subject applied for, still remains a challenge (Umalusi, 2019:x). This paper argues that submission of evidence of qualifications and the number of years that the teachers have taught the paper will not suffice since, as stated earlier that this subject is versatile and literary texts are regularly changed. Content knowledge is assumed to be a significant criterion than experience and teaching in grade 12.

5.4 Influence by Teacher Formations

The recent study by van Wyk, Teise & le Roux (2020:119-120) has found that there is a blaming game around appointment of NSC markers in the Northern Cape. van Wyk *et al.* (2019:119-120) mentioned that the union see departmental officials as subjective during the selection and appointment of markers and on the other hand, interestingly the chief markers and curriculum officials supported each other that teachers' unions seem to exert

undue power and influence in the processes (van Wyk *et al.,* 2019). They avow that the selection is secretively done and lacks transparency (*ibid*). The perception is that the appointment is often subject to the imperatives of equity and representivity where teachers, even those who are incompetent get appointed (van Wyk, 2016). The union stance that a system of teacher testing will disadvantage teachers from poor schools who cannot compete with those from wealthier schools was seen as injudicious by Spaull (2013). There were much debates on the administration of competency tests for NSC markers where Umalusi argued that the use of these tests was not a guarantee of quality marking (*ibid*).

5.5 Incompetent Marking

Marking is a process that is supposed to develop teachers' skills in teaching and assessing processes. The integrity of the NSC examination crucially depends on the ability of markers to assess student responses accurately (Spaull, 2013). Without directly testing the content knowledge and marking competency of teachers one cannot be sure that the quality of matric makers is such that NSC candidates receive the marks they deserve (*ibid*). According to Umalusi (2014a:39), chief markers and internal moderators of 2014 EFAL, did not show experience in Literature paper in the Northern Cape province. Additionally, during the memorandum discussions some representatives expressed uncertainty about how to interpret open-ended questions (Umalusi, 2014a:51).

These reports are confirmed by some evidence of shadow-marking noticed on the part of moderators at various internal levels (Umalusi, 2014a:62) during the audit. The ministerial task team report on the NSC (2014:76) also announced that EFAL Literature candidates had problems with open-ended questions and that these questions presented a considerable marking problem to markers who struggled with innovative responses. It was further realized that the input from of chief marker and internal moderator in the 2018 Literature paper report were lacking quality, standard and relevance (Umalusi, 2018). This can negatively impact marking quality. It must be noted that the "reliability of the marking system is primarily dependent on the professional competency and calibre of markers" (Umalusi, 2014a:30), especially those markers selected as chief markers and moderators.

According to the DBE (2010, in van Wyk, 2019:47) only teachers who have expressed the academic content knowledge and pedagogical expertise in the classroom, are the ones selected for the marking in NSC exams because a tthose with low subject knowledge and poor learner performance would be challenged by problem solving and critical thinking demonstrated in learner responses. However, concerns about the NSC examination relating to competence of markers and subject knowledge (Beeld, 17 December 2011; Beeld, 25 April 2012 in van Wyk *et al.,* 2020:116) have been raised empirically and anecdotally.

5.6 Administrative Duties

National marking and standardisation procedures followed prior marking involves much work, time and resources, for example, after the paper has been written, chief markers and internal moderators do pre-marking. On completion, they convene a meeting with the relevant subject specialists to scrutinize the question papers and the marking guidelines. Then they attend standardisation national meeting, on their return to the provinces, they replicate the training approach used at the DBE, to train all markers accordingly, form senior markers to markers. For quality assurance measure, the DBE deploys moderators to the marking centres to conduct onsite moderation in selected subjects. This study resultantly propose the use of computer based testing to select markers whose competency will minimise costs, failures and improve quality in NSC examination.

6. Conclusion and Recommendations

Teacher competency testing, relates to increase in content knowledge building and efficacy. Markers should be required to meet high qualifications and high knowledge, to demonstrate an aptitude of competence in marking. The paper identified challenges in the marking of Literature Paper and recommended that a CBCT that should be completed to qualify to mark Literature in NSC exams. While the use of competency test for appointment in marking is strongly opposed by some teacher unions, this paper believes CBCT will reduce discriminatory selection, irregularities, and increase objectivity, marking credibility, reliability, time on task ethics and high quality in assessment. Hence this paper recommends that testing be done prior to appointment. CBCT would assure teacher content

knowledge required and basic computer skills that be established. The study maintains that CBCTs be administered in SA since they show the following benefits: increased teacher competency and confidence; reduction in costs associated with turnover (manual appointments and training costs); more efficiency, less time-consumption; increased transparency, uniformity and objectivity; integration of language use and ICTs to uphold quality marking of NSC Literature Paper. The study recommends the following:

6.1 Why Computer Based Competency Test?

Competency tests add to the integrity of the exams (Fredericks, 2015), but it has been a challenge in SA but the execution failed in many provinces due to rejection by the teacher unions (The Mail & Guardian, 2014) and a lack of clear mandate from DBE (ibid). Lately, the Western Cape Education Department (WCED) administered competency tests in 11 subjects excluding EFAL where only applicants who achieve 60% and above in the selected subjects are considered for appointment (WCED, 2020).

Computer based testing (CBT) is preferred for its advantages over paper and pencil testing (Thurlow, Lazarus, Albus & Hodgson, 2010). For instance, U.S. for Department of Education encouraged the development of CBT for its efficient administration, improved writing performance, immediate results, increased authenticity among others *(Ibid).* Additionally, there has also been a breakthrough in development and implementation of computerized testing in large-scale testing programs such as certification, admissions, and psychological tests (Kim & Huynh, 2007, in Rezaie & Golshan, 2015:132). Such types of testing are also applied in SA traffic departments for testing learner drivers' skills before they are awarded licences. The focal point here is that marking epitomises professionalism, integrity and quality. This study believes that as agents of curricular change and custodians of Literature content knowledge teachers should be at the forefront of innovation and development Literature paper. It argues that integrating technology in selection of markers will not only address teacher development and motivation to study selected literary texts, but will also be addressing the White Paper on e-Education (Department of Education, 2004). Moreover, in language testing field, technology has been an instrument which led to expansion and innovation in language testing (Rezaie & Golshan, 2015).

For example, computer adaptive test (CAT) is a type of computer-based test which adapts to the ability levels and on-line processes were increasingly used for evaluating the language proficiency of English learners (Fleming & Hiple, 2004, in Rezaie, & Golshan, 2015). In this case, the study argues that ICTs advances can be facilitated to measure competency so that there is uniformity and transparency to selection of all Literature potential markers. According to Tisi, Whitehouse, Maughan and Burdett, (2013:3) studies of MR generally require that the candidate responses be marked at least two times to assure quality. In SA, one script is marked about seven times, making the process financially taxing, laborious and monotonous. There is plenty research on the MR (de Moira *et al.*, 2002), but research on how these markers are selected and appointed is still lacking. For these reasons, this paper suggests that teachers' content knowledge be tested before they are appointed for marking, and that they respond to the same paper that EFAL candidates write in that specific year so they can be self-prepared for marking to avoid irregularities of underscoring or over scoring due to lack of content knowledge. It further stresses that the testing should be completed by means of computers for objectivity, time-saving measures and impromptu results.

6.2 Proposed Computer Based Competency Test

In order to attempt to address the challenges above, a technology integration marker selection model could be an applicable strategy to increase effectiveness, efficiency, and MR in Literature in NSC. Currently provinces do not employ CBCT for marker selection purposes, only competency tests are employed in some subjects in WCED as stated earlier, however EFAL is not included. Existing procedures look susceptible to subjectivity and lack of transparency as a result it can probably fail to measure the knowledge and skills required of competent markers as stated above.

Against all these insights, this paper proposes the following procedures for selection and appointment of markers for Literature. (See Table 1 on the following page for proposed requirements and roles of markers):

- Teachers who wish to mark sit for the examination at the centres arranged by district offices.

Table 1: Proposed Model for Markers and their Roles

Position	Requirements	Duties
Chief Administrator (01)	• Computer literate, excel • Knowledge of Literature • 100 % performance in competency test	• Controlling the flow of scripts • Issuing out batches of scripts for marking • Receiving batches after moderation • Returning boxes for the storage • Compiling report
Chief markers (1:12 - determined by the number of senior markers, a maximum of 12 senior markers)	• Computer literate • Knowledge of Literature • Teaching Literature in FET • Record of excellent performance in EFAL teaching in FET • 100 % performance in competency test	• Moderating scripts remarked by senior markers • Mentoring senior markers • Clarifying queries to all markers • Compiling report
Senior markers (1:12 - determined by the number of markers)	• Knowledge of Literature • Teaching Literature in FET • Record of excellent performance in EFAL teaching in FET • 95% pass in competency test	• remarks scripts remarked by markers • Mentoring markers • Clarifying queries to allocated markers • Compiling report
Markers (determined by the number of candidates who wrote the paper in a particular year)	• Knowledge of Literature • Teaching Literature in FET • Record of excellent performance in EFAL teaching in FET • 80% pass in competency test	• Marking allotted scripts • Compiling report
External moderator	• Computer literate, Excel • Knowledge of Literature • Record of excellent performance in EFAL teaching in FET • 100 % performance in competency test	• Moderating scripts remarked by chief markers, senior markers and markers • Mentoring all markers • Clarifying queries to all markers • Compiling report
Quality assurer	• Computer literate, Excel • Knowledge of Literature • Record of excellent performance in EFAL teaching in FET • 100 % performance in competency test	• Moderating scripts remarked by chief markers, senior markers and markers • Mentoring all markers • Clarifying queries to all markers • Compiling report
Administration assistants	• Computer literate • Knowledge of Literature • Teaching Literature in FET • 80 % performance in competency	• Distributing boxes to markers • Repacking boxes • Verifying order and sequence of boxes • Resubmitting boxes to the chief administrator • Compiling report
Examination Assistants	• Computer literate • Knowledge of Literature • Teaching Literature in FET • 80 % performance in competency	• Collecting scripts from allocated chief markers • Verifying scores per script • Compiling report
Data capturers	• Computer literate, especially excel • Knowledge of Literature • 80% performance in competency	• Capturing scores from moderated scripts • Compiling report

Source: Author

- Teachers complete the Literature paper completed by grade 12 candidates for the same allotted time (2 hours).

- Competency test is strictly completed online.

- Required documents are submitted by successful applicants at the centre for further logistics as teachers receive their feedback immediate results.

This paper suggests that the competency of applicants be tested in Literature NSC examination paper. It proposes that:

- Applicants respond to the same Literature paper for candidates to:

  - motivate teachers to study Literature;

  - reduce costs and time followed in manual procedures;

  - increase marking reliability; and

  - reduce skepticism in technology use.

- It should be allotted the same date and duration at the training centres in respective districts.

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- The chief and senior marker positions be allocated only to applicants who obtain above 90% in the competency tests so that they offer relevant mentoring in the subject during marking.

- Markers and senior markers obtain a minimum of 80-89% in the competency test (This equates level 7 performance).

- Successful test takers should then submit relevant documents for administrative matters (identification access, accommodation, positions, marking packages, payments), instead of waiting when teachers report for marking which impacts on their time, attentiveness and costs.

7. Limitations of the Study

Since this study is solely based on secondary empirical data, avoiding bias is impossible, but the researcher attempted to strengthen rigour and minimise potential bias. For example, document analysis was used as a standalone (Bowen, 2009). The researcher was aware of the probable influence on what is studied (Probst & Berenson, 2014), as such numerous materials were reviewed and sensitive information was acknowledged. The researcher considered all the data obtained and clearly analysed it, and ensure that pre-existing assumptions are kept at bay. The qualitative methodology was the most appropriate since the research area required a review of a broad range of documents, providing more reliable findings from which conclusion can be drawn to take an informed decision on recommendations for procedures on marker selection.

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