

Teacher readiness towards nurturing Advanced Performance among all students: A pilot study¹

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ABSTRACT

Equipping students with well-developed thinking skills and dispositions to become Advanced Performers appears to remain a daunting task for teachers. To this end, the research foregrounded two feasibility objectives for a pilot study that, firstly, obtained information based on teachers' perceptions about the strengths and weaknesses in relation to the factors that influence the nurturing of Advanced Performance, and, secondly, established the suitability of the questionnaire items to ascertain teachers' perceptions about their readiness towards nurturing Advanced Performance. Quantitative, non-experimental, descriptive survey research with a heterogeneous group of Grade R and Foundation Phase teachers from two public primary schools and one pre-school (n = 26) in South Africa was employed. Findings revealed that a main study would be feasible and should continue with modification to the questionnaire to streamline data collection. Perceptions about teaching practice as well as competence in teaching thinking skills and dispositions seem to strongly influence teaching for Advanced Performance. Questionnaire items could be selected and grouped more meaningfully to focus attention to these two constructs. Moreover, exploring additional contextual factors, such as curriculum overload and a content-driven approach to teaching, could extend the present identification of factors that hamper the nurturing of Advanced Performance.

Keywords: Advanced Performance (AP), advanced cognitive performance characteristics, values, attitudes and attributes

INTRODUCTION AND PROBLEM STATEMENT

In South Africa, concerns are raised about the effectiveness and quality of education in general (Engelbrecht et al., 2016; Pretorius, 2014; Schoeman 2012; Taylor, 2011; Van der Berg et al., 2011; Wildeman & Nomdo, 2007). It is argued that schools are not preparing students to become Advanced Performers, that is, students who are adequately equipped with thinking skills and dispositions to cope with life challenges,

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and challenges posed by the world of work and study in the 21st century (Booyse, 2016; Eyre, 2016; Jansen, 2012). Evidence of this is noticed in the poor results of systemic evaluations such as the Annual National Assessments (ANA) (standardised national assessments for Languages and Mathematics to measure students' progress and to establish their performance levels to design school improvement plans), as well as poor Grade 12 results, and poor performance in core subjects such as Mathematics and the Natural Sciences (Jansen, 2017).

Initial, emerging research findings documenting the effects of teaching to nurture Advanced Performance (AP) in 30 premium international schools of Nord Anglia Education, across the Americas, Asia, the Middle East and Europe since 2010, revealed inspiring results in relation to progressive academic achievement (Eyre, 2015). Teaching to nurture AP has, however, not yet been applied to students in the South African context (Eyre, 2015). Research in South Africa with its diverse socioeconomic contexts could fill a contextual gap in the current research base. An initial baseline assessment of the status quo in relation to the development of AP among students in South Africa may single out certain areas for special and focused attention and remediation, specifically in relation to the personal, school- and classroom-related factors that influence the nurturing of AP (Eyre 2016). Developing AP competencies among students could be regarded as a global phenomenon (Eyre, 2016; Kerr et al., 2016). Consequently, the findings of the research could extend existing theory on nurturing AP and promote a broader investigation into personal, school- and classroom-related factors that could influence how teachers conduct teaching nationally and internationally.

PURPOSE OF THE STUDY

This initial exploratory, pilot study with a diverse group of South African primary school and pre-school teachers aimed to achieve two feasibility objectives, namely (i) to obtain rich and practical information revealing teacher perceptions about the strengths and weaknesses in relation to the factors that influence the nurturing of AP, and (ii) to establish the suitability of the questionnaire as a data collection instrument to ascertain teacher perceptions about their readiness to nurture AP. Achieving the objectives could inform, guide and direct follow-up research in further, larger studies (Eldrige et al., 2016; Johanson & Brooks, 2009; Schader, 2015; Strydom, 2011; Thabane et al., 2010).

LITERATURE REVIEW

Background

Since 1994, developing the potential of all students as well as equipping them to deal with the challenges of the 21st century were placed at the top of the South African education agenda (Department of Basic Education, 2011; Department of Education, 1997, 2001, 2002). However, these ideals seem difficult to achieve and are consequently not operationalised effectively during teaching. The curriculum seems to be overly focused on content-driven learning and achieving grades as opposed to nurturing AP (Booyse 2016; Jansen, 2012). Not only in South Africa, but globally, 21st-century students will be challenged to solve diverse problems in a competitive society for which they will require the characteristics of Advanced Performers (Eyre, 2016; Miri, David & Uri, 2007).

AP conceptualised

Achieving AP is conceptualised according to the work of Eyre (2016), and involves scaffolded learning, where all students receive support to become Advanced Performers⁶ who master learning outcomes

⁶ The concepts 'Advanced Performance' and 'Advanced Performers' are used interchangeably as they cannot be separated. Teaching that displays the characteristics of Advanced Performance is a prerequisite for students to become Advanced Performers.

and are academically successful because they possess advanced cognitive performance characteristics (ACPs) (thinking skills or competencies to think), as well as values, attitudes and attributes (VAAs) (thinking dispositions or competencies to behave) to cope with the challenges and demands of the 21st century (Eyre, 2016; Felner, 2000; Felner et al., 2001; Felner et al., 2007; Kerr et al., 2016).

Numerous pathways to achieve AP have been identified in the literature (Felner et al., 2001, 2007; Kerr, et al., 2016). The authors of this article focused on the pathways suggested by Eyre (2016) (see Figure 1 below) as the pathways identified by Felner et al. (2007) and Kerr et al. (2016) do not adequately describe the practical, classroom-based component as pathway to achieve AP, which was of importance for the pilot study.

Figure 1:
Teaching for Advanced Performance (Adapted from Eyre, 2016: 32)

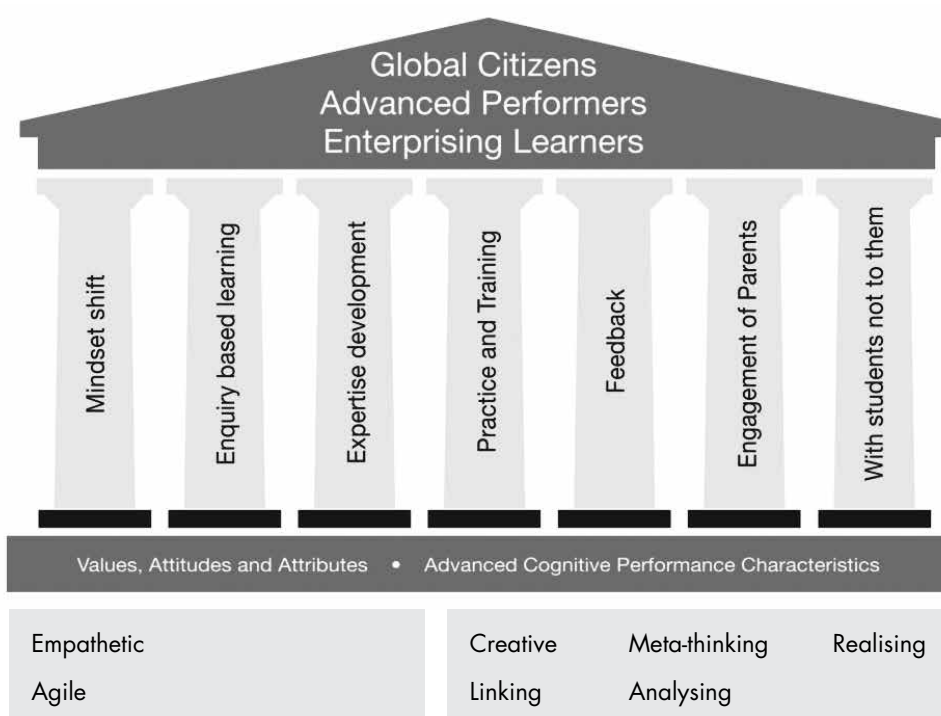


Figure 1 indicates that ACPs and VAAs form the foundation of teaching that aims to nurture AP. ACPs refer to the ways of thinking that students need to develop, which can be grouped into five categories (Eyre, 2016). Firstly, students need to become *creative*, fluent and original thinkers. Secondly, *meta-thinking* involves a continuous awareness of one’s own thinking and regulating one’s thought processes. Thirdly, students should not view learning as a series of isolated events, but rather as a process of *linking* different sets of information. Fourthly, *analysing* information in a precise, critical and logical way characterizes the way in which an Advanced Performer thinks. Finally, *realising* enables a student to acknowledge that other characteristics such as working with speed and accuracy contribute to effective learning (Eyre, 2016).

Teaching for AP emphasises the joint development of learning dispositions or VAAs in conjunction with the ACPs. The VAAs can be grouped into three categories, namely ‘*Empathetic, Agile and Hard-working*’ (Eyre, 2016: 67). The VAAs that form part of the empathetic category involve working both independently and in collaboration with others to achieve outcomes, displaying concern for society and having confidence in dealing with new challenges. Agile students are curious and keen to learn in both familiar and unfamiliar contexts and are open-minded and flexible in their thinking. Hard workers embrace practice, persistence and resilience, irrespective of the obstacles one is confronted with.

The seven pillars or pathways (see Figure 1) that, among others, encompass various personal, school and classroom factors that strengthen the development of AP (Eyre, 2016) informed the purpose of the study as well as the construction of the questionnaire items, and guided the data analysis, are explained below.

Factors that strengthen the development of AP

Personal factors

Teachers' attitudes, beliefs and perceptions about teaching and education. Teachers' attitudes and beliefs about the malleability of the brain, and how to exploit and manage inherited predispositions towards success, are critical attributes in developing Advanced Performers (Devine, 2011; Dweck, 2000; Dymna, Declan & McGillicuddy, 2015; Eyre, 2016; Hopkins et al., 2011; Lin-Siegler, Dweck & Cohen, 2016).

The role of self-efficacy and competence. Self-efficacy is important to prompt and motivate teachers to persist in enabling students to be successful in AP (Deemer, 2004; Eyre, 2016; Tompkins, 2013; Wyatt, 2014).

School factors

The role of effective school management and professional development. School managers should lead curriculum development (Ediger, 2014) and direct ways for preparing staff to make a difference to classroom practice (Creemers, Kyriakides & Sammons, 2010; Eyre, 2016; Hallinger & Lu, 2014; Newton & Wallin, 2013; Sammons, Davis & Gray, 2016). Additionally, teachers need to strive to improve their practice and expertise through continuous professional development initiatives (Reynolds et al., 2016) and by collaborating with other teachers to share ideas about best classroom practices (Danielson, 2016; Eyre, 2016).

The role of parents and the community. In support of Eyre (2016), Felner et al. (2001) and Kerr et al. (2016) also argue for a reengagement of families, parents and communities in education. Eyre (2016) contends that parents should collaborate with teachers and students to understand the building blocks of advanced thinking and learning, and that they should reinforce what is done at school (Eyre, 2016).

Classroom factors

Teaching and assessment strategies. Enquiry-based learning can be regarded as an effective teaching and learning approach to provide focused practice and training to students in applying the ACPs and VAAs (Eyre, 2016; Green & Murriss, 2014; Wegerif, 2013). Different enquiry-based strategies, such as play and cooperative learning, help students (i) develop flexible knowledge, effective problem-solving and social-emotional skills, and (ii) promote self-directed learning (Bodrova & Leong, 2012; Diamond & Lee, 2011). Using stories is a suitable tool to convey messages, contextualise an argument, model behaviour (Van Aswegen, 2015) and advance conceptual development (Loukia, 2006). The 'Six Thinking Hats' strategy prompts the flexible use of different ACPs (factual, critical and creative thinking, synthesis, and argumentation) (De Bono, 1992). Dialogic education enables students to engage respectfully with others in meaningful dialogue, argumentation and reasoning about various knowledge claims, and to communicate their own views (Costa & Kallick, 2009; Van den Berg, 2010). Thinking Maps involves the visual application of eight important cognitive processes that are required for effective learning across any subject field (Hyerle, 2014).

Feedback. Frequent formative feedback that feeds learning forward, and does not focus on students' shortcomings, instils in students the confidence that growth and progress are attainable (Eyre, 2016), and indicates to students when and whether they use and apply the ACPs and VAAs that they have acquired (Earl, 2013).

Student responsibility. Students should take responsibility for their own learning, be actively involved, and continuously reflect on the growth and development of their ACPs and VAAs (Eyre, 2016; Felner et al., 2001).

RESEARCH DESIGN AND METHODOLOGY

Research framework and approach

The pilot study employed non-experimental, quantitative, descriptive survey research, which, according to McMillan and Schumacher (2014), is suitable to obtain an objective, numerical description of perceptions about a current phenomenon (Maree & Van der Westhuizen, 2010). A positivist research paradigm guided the surveying of teachers' perceptions, as data collection and interpretation took place in an objective way.

Sample and biographical characteristics of the participants

Data were collected from a heterogeneous group of female Grade R and Foundation Phase teachers (n = 44) who teach in average to poor socioeconomic environments. One full-service primary school (ordinary schools turned into inclusive schools accommodating the full range of learning needs) in the Sedibeng East District, and one primary school in the Sedibeng West District of the Gauteng Department of Basic Education, took part in the research. One preschool situated on a farm in the Oudtshoorn district, Cape Town, also took part in the research. By means of non-probability sampling, the schools were conveniently selected based on their willingness to become involved in the research (Creswell, 2012). Given the voluntary nature of the research, only 26 participants returned completed questionnaires. According to Isaac and Michael (1995) and Hill (1998), 10 to 30 participants could be regarded as sufficient for exploratory pilot studies in the social sciences, and Hertzog (2008) recommends 25 to 40 participants for instrument development.

Demographic information about the research participants is summarised by means of frequency counts in Table 1 below.

Table 1:
Frequency distribution: Demographic information of research participants

1	Gender	Male	Female				
		0	26				
2	Age (in years)	21-25	26-30	31-35	36-40	41-50	51+
		0	8	0	0	7	11
3	Cultural group	Black	White	Asian	Coloured	Other	
		17	7	0	2	0	
4	Qualifications	M + 2	M + 3	M + 4	M + 5	M + 6	M + 7
		8	13	5	0	0	0
5	Years of teaching experience	0-5	6-10	11-15	16-20	21+	
		5	5	4	2	10	

Data collection methods

A researcher-constructed, ordinal, descriptive Likert-scale questionnaire with 168 closed and six open items was administered. The open questions explored the teachers' understanding of AP and how it could be nurtured. The closed questions focused on a number of constructs in the literature (Eyre, 2016; Teddlie et al., 2006) that could be regarded as prerequisite personal, school- and classroom-related factors for nurturing AP according to which strengths and weaknesses in relation to the teachers' perceptions could be deduced. Table 2 below clarifies the questionnaire constructs and the descriptive Likert scales used to classify the teacher responses.

*Table 2:
Questionnaire constructs and Likert-scale descriptors*

Questionnaire constructs	Likert scale
Attitudes and beliefs about education	<ol style="list-style-type: none"> 1. Strongly disagree: It is never the case or possible. 2. Disagree: There are very few cases where this is possible. 3. Agree: There are many cases where this is possible. 4. Strongly agree: This is definitely almost always the case or possible.
Perceptions about current teaching practice Self-confidence in application of teaching and assessment strategies	<ol style="list-style-type: none"> 1. Seldom, in less than half of my lessons: In less than half of my lessons I have no self-confidence to let students do this. 2. In about half of my lessons: In about half of the lessons I present I feel confident to let students do this. 3. In about three quarters of my lessons: In about three quarters of the lessons I present I feel confident to let students do this. 4. In almost every lesson: In about all of the lessons I present I feel confident to let students do this.
Perceptions about management and support of teaching and learning	<ol style="list-style-type: none"> 1. Almost never: once per school term. 2. Seldom: three times per school term. 3. Frequently: four times per school term. 4. Very often: more than four times per school term.
Perceptions about professional development	<ol style="list-style-type: none"> 1. Hardly ever/never: once per school term. 2. Occasionally: twice per school term. 3. Frequently: three times per school term. 4. Almost always: more than three times per school term.

Questionnaire constructs	Likert scale
Competency in application of teaching and assessment strategies	1. Not competent: I know about the strategy but do not know how to apply the strategy/I do not understand and I do not know how to teach it to students.
Rating competence in teaching ACPs and VAAs	2. Somewhat competent: I have some knowledge about the strategy but lack the skill to apply it/I have some understanding but lack the skill to teach it to students. 3. Competent: I know how to apply the strategy but need more practice/I understand it and have an idea of how to teach it, but need more practice to teach it well. 4. Highly competent: I am good at applying the strategy and can teach others how to apply it/I understand it well, can teach it, and can explain and demonstrate to others how to teach it well to students.
Self-efficacy beliefs	1 = none at all; 9 = a great deal

Acceptable Cronbach's alpha coefficients between 0.695-0.976 (Maree & Pietersen, 2008) were calculated. Knowledgeable co-researchers as well as an expert in the field of AP assisted in identifying the dimensionality of factors influencing AP and provided their opinions on the questionnaire format, as well as on the face value of the open and closed questionnaire items (Tsang, Royse & Terkawi, 2017).

Data analysis

Descriptive statistics were used to summarise the questionnaire data reported with means and standard deviations in the results section (Leedy & Ormrod, 2013). According to Lancaster, Dodd and Williamson (2004), a descriptive analysis could be regarded as suitable for pilot studies. The data did not indicate severe deviations from normality; therefore, parametric inferential statistics were employed to compare the perceptions of the participants in relation to the different constructs in the questionnaire (Creswell, 2009). In this regard, a t-test was used to establish statistically significant differences between the means of constructs ($p < 0.05$). Cohen's d was calculated to determine the effect or magnitude of the statistically significant differences between the means of two constructs in order to conclude whether an effect is meaningful in real life (McMillan & Schumacher, 2014). A multiple regression analysis was performed to examine the relationship between the different independent contextual variables. More than one independent variable was used to predict the dependent variable, and the partial effect of each independent variable on the dependent variable was calculated (Pietersen & Maree, 2016). The small sample size did not allow for statistical analyses that control for the influence of biographical variables.

Ethical considerations

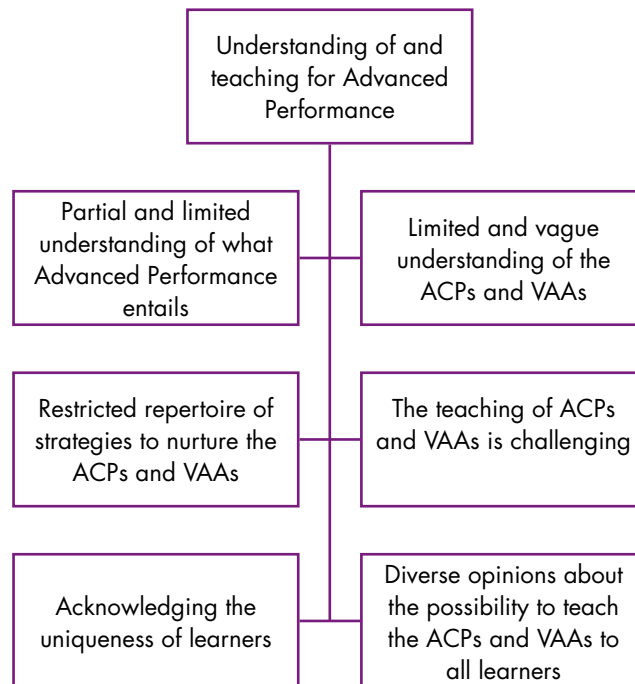
The Ethics Committee of the university where the research was conducted approved the research. Informed consent was obtained from all the participants. Participation in the research was anonymous and voluntary, and assurance was given that responses would be treated confidentially.

RESULTS

Responses to open questions

The responses to the open questions were wide ranging, which complicated the determination of themes. Consequently, it was decided to establish trends (Figure 2) in relation to strengths and weaknesses (feasibility objective 1) about how the participants understand AP and its development.

Figure 2:
Trends in understanding of and teaching for Advanced Performance



Three basic trends were identified for the participants' understanding of AP. Firstly, the following responses portray the partial understanding trend: 'Performance planned for students to achieve high'; 'All students with and without challenges are accommodated during teaching'; and 'learning that accommodates all students at different learning levels'. Secondly, according to the limited understanding trend, a few participants focused on critical and creative thinking as well as problem-solving: 'the opportunity given to students where they are trained to focus on critical and creative thinking as well as problem solving'. Thirdly, a lack of understanding is illustrated by responses such as 'carried out action in time, ahead of time'; 'performance according to ability'; and 'performance that students achieve that aligns with their talents and abilities'. None of the responses indicated that becoming an Advanced Performer requires the acquisition of ACPs and VAAs comprehensively and in an integrated manner. The ACPs mentioned included (i) language skills and (ii) thinking skills (analysing; evaluating; synthesising; comparing; making decisions; reasoning; creative, flexible and critical thinking; and metacognition).

Relevant comments about VAAs included (i) attitudes towards learning, namely a 'positive attitude towards learning', 'willingness to learn', and 'attentiveness'; (ii) behavioural traits such as 'respect', 'good discipline', 'accepting authority' and 'good manners and self-image'; (iii) personal traits, which included 'inquisitiveness', 'self-discipline', 'perseverance', 'open-mindedness', 'self-regulation', 'understanding why learning is important', 'being creative', 'being innovative', and 'prepared to deal with the unexpected and what the future holds'. Various unrelated responses included 'Bloom's taxonomy strategy is the best'; 'knowledge and skills gap that exist in their content knowledge'; and 'through understanding why learning/teaching is important in the lifetime'.

The responses revealed an apparent restricted repertoire of strategies to develop ACPs and VAAs as the participants mainly cited questioning and problem-solving as strategies. Disturbingly, participants mentioned a number of teacher-centred teaching strategies, such as 'demonstrations', 'explanations', 'reading' and 'counting', which could be regarded as strategies that develop the ACPs. A lack of understanding of the strategies to nurture AP was evident in responses such as 'baseline assessment',

'rewards', 'feedback', 'self-discipline', 'self-confidence', 'effective classroom management', 'structure in the classroom', and 'good lesson introductions'.

A prominent trend in the responses was that 13 teachers acknowledged the 'uniqueness' of students and affirmed that students 'learn differently, (and) all are capable of significant academic success'. The majority of the participants (69%) viewed the teaching of ACPs and VAAs as challenging and was divided in their opinions about the possibility to teach ACPs and VAAs. In support of a growth mindset, about half of the teachers mentioned that the ACPs and VAAs can be nurtured through 'mediation', 'with motivation and rewards, and 'stimulate[d] and improve[d] [through] self-confidence'. The other half of the teachers displayed a fixed mindset by noting that the teaching of the ACPs and VAAs are not always possible due to 'overcrowding'; that it is 'not possible for grade 1'; that 'students' circumstances' impact negatively on the effectiveness of teaching ACPs and VAAs, and that teaching them is problematic for 'students with concentration problems'. These teachers seem to acknowledge that high levels of achievement are only possible for some students.

Surprisingly, and in contrast to the previous response, 20 of the 26 teachers perceived the development of student potential or ability as possible through various teaching methods and one-on-one interventions. Only six of the teachers perceived the development of potential or ability not always being possible as the 'home environment does not allow this'; teachers 'need support from [a student's] home'; the teaching of thinking skills is 'influenced by [the] attitude of [a] student'; and 'students need to cooperate'.

Responses to closed questions

Although all questionnaire items were analysed, given the large volumes of data, the analysis focuses on responses that could be regarded as strengths and limitations regarding the factors that influence the nurturing of AP (feasibility objective 1).

The results below report the standard deviations (in brackets) as well as the means that were calculated in accordance with the four-point Likert scale. The responses obtained from each participant in relation to the four-point Likert scale for each questionnaire item were totalled and divided by the number of participants who responded in order to obtain a mean per item. Similarly, section means were calculated by totalling the means per question linked to the four-point Likert scale for each of the participants and dividing the total by the number of the participants.

Attitudes and beliefs about teaching and education. The mean obtained for this section indicated that most of the participants agreed ($\bar{x} = 3.155$ (0.334)) and that their attitudes and beliefs about teaching and education support the nurturing of AP. Teachers agreed that feedback should tell students what to achieve next ($\bar{x} = 3.730$ (0.452)); that students need to understand the ACPs and VAAs they need to achieve, respectively ($\bar{x} = 3.730$ (0.452)); and that teachers need to have high expectations for students ($\bar{x} = 3.461$ (0.647)), remain dedicated ($\bar{x} = 3.423$ (0.758)), and enthusiastic ($\bar{x} = 3.346$ (0.816)) about teaching, irrespective of the challenges they encounter. The majority of teachers also agreed that teachers should inform parents about what happens in class ($\bar{x} = 3.5$ (0.812)). It was encouraging to note that teachers do not regard the content that they teach as more important than how they teach it ($\bar{x} = 2.307$ (0.970)), and that passing exams is not more important than developing VAAs among students ($\bar{x} = 2.076$ (0.688)). Additionally, teachers also disagreed ($\bar{x} = 2.423$ (1.027)) that they know more than students do, that students should not be allowed to develop answers to questions that may be incorrect, and that teachers should give students the correct answers. However, teachers disagreed to having noise in their classes when students explore information on their own ($\bar{x} = 2.807$ (0.895)), and perceived that they cannot make progress with difficult students ($\bar{x} = 2.961$ (0.662)). The findings mentioned last appear to be beliefs that do not align well with teaching practices that nurture AP.

Perceptions about teaching practice. The teachers indicated that teaching for AP happens between half to three quarters of the time during lessons ($\bar{x} = 2.840$ (0.553)). It is noteworthy that the majority of the participants indicated that they create opportunities for students to develop thinking skills ($\bar{x} = 3.684$ (0.939)), encourage students to find solutions to problems on their own ($\bar{x} = 3.115$ (1.177)), encourage students to ask questions about the information presented to them ($\bar{x} = 3.115$ (1.177)), and build their teaching around real-life problems ($\bar{x} = 3.000$ (0.938)) in about three quarters of their lessons. However, asking students to help plan activities for class ($\bar{x} = 1.730$ (0.919)), requesting students to explain their own thinking ($\bar{x} = 1.884$ (0.993)), waiting long before students quieten down before lessons start ($\bar{x} = 2.076$ (1.129)), and allowing students to discover meaning of subject matter on their own ($\bar{x} = 2.615$ (1.098)) could be regarded as limitations towards nurturing AP. The mentioned activities appear to happen only in half and fewer than half of the teachers' lessons. In particular, the emphasis that appears to be placed on direct transmission of subject content about three quarters of the time ($\bar{x} = 3.230$ (0.710)) would not promote the nurturing of AP. This response also contradicts the teachers' perceptions that they create opportunities for students to develop thinking skills in about three quarters of their lessons ($\bar{x} = 3.461$ (0.706)). Evidently, the important contribution that parents could make in assisting teachers to nurture AP needs to be addressed more adequately, as the teachers indicated that parents are only informed about what happens during teaching about half of the time ($\bar{x} = 2.884$ (1.275)).

Management and support of teaching and learning. Management and support at management and Department of Basic Education levels appear to happen *frequently* ($\bar{x} = 3.253$ (0.540)), that is, four times per school term. Support from community health and social services to disadvantaged students, however, appears to pose a limitation as the involvement was perceived as *very seldom* (three times per school term).

Professional development. Professional development efforts seemingly take place *frequently* ($\bar{x} = 3.152$ (0.476)), that is, about three times per school term. Although professional development in general appears to be a strength, the collaboration with teachers at other schools in planning teaching and learning activities that only takes place *occasionally* ($\bar{x} = 2.333$ (0.963)), that is, twice per school term, could be regarded as a limitation.

Competency in the application of teaching and assessment strategies. It could be assumed, in general, that the teachers who took part in the study only appear to be somewhat competent in applying teaching and assessment strategies that nurture AP ($\bar{x} = 2.835$ (0.551)). The majority of participants viewed themselves as competent in using worksheets ($\bar{x} = 3.269$ (0.724)), cooperative learning ($\bar{x} = 3.153$ (0.834)), charts ($\bar{x} = 3.083$ (0.720)), projects ($\bar{x} = 3.038$ (0.958)), assignments ($\bar{x} = 3$ (0.938)), open questions ($\bar{x} = 3$ (0.849)), and stories ($\bar{x} = 3$ (0.800)), thus indicating that they know how to apply the strategy, but need more practice. It is troubling that teaching and assessment strategies that promote the development of the ACPs and VAAs, such as Habits of Mind, Problem-based learning, Six Thinking Hats, Thinking Maps, Play, Debates, Self-Assessment, Peer-Assessment and Concept Maps, seem to be underutilised. The teacher responses to the application of these strategies only yielded mean averages of $\bar{x} = 2^+$, implying that they perceive themselves to be *somewhat competent*; having some knowledge about the strategies, but lacking the skills to apply the strategies.

Self-confidence in the application of teaching and assessment strategies. Teachers seem to only feel confident in about half of their lessons ($\bar{x} = 2.925$ (0.562)). The teachers appeared to be the most confident in applying teaching strategies, which involve the direct transmission of content ($\bar{x} = 3.480$ (1.056)), and presenting summaries of previous lessons to students ($\bar{x} = 3.346$ (0.892)), in about three quarters of their lessons. It is worrying that teachers' self-confidence appeared to be low with regard to asking students to help plan activities for class ($\bar{x} = 1.923$ (0.891)), encouraging students to ask questions

about information ($\bar{x} = 2.961$ (0.871)), asking students to explain their thinking ($\bar{x} = 2.230$ (1.177)), and holding debates in which students argue for a particular point of view, which might not be their own ($\bar{x} = 2.423$ (1.102)). The authors carefully conclude that teachers do not feel confident in applying many important teaching and assessment strategies that could nurture the ACPs and VAAs that are important for nurturing AP.

Competence in teaching the ACPs and VAAs. The teachers seem to feel *competent*, thus understanding how to teach the ACPs and VAAs, but need more practice to teach students how to attain intellectual confidence ($\bar{x} = 3.307$ (0.736)) and self-regulation ($\bar{x} = 3.115$ (0.711)), as well as how to plan strategically to use different learning strategies ($\bar{x} = 3.153$ (0.613)). On the contrary, they noted being somewhat competent, consequently having some understanding of the ACPs and VAAs, but lacking the skills to teach the ACPs and VAAs involved in identifying alternative perspectives ($\bar{x} = 2.846$ (0.675)), working with speed and accuracy ($\bar{x} = 2.9730$ (0.778)), and making connections between information ($\bar{x} = 2.923$ (0.628)). The mean score obtained for the entire section ($\bar{x} = 2.998$ (0.522)) disclosed that the majority of the teachers only feel *somewhat competent*, possessing some understanding of the ACPs and VAAs but lacking the skills to teach them.

Self-efficacy beliefs. In terms of self-efficacy measured on a nine-point scale (1 = none at all; 9 = a great deal), the majority of the teachers observed that they possess *quite a lot* of self-efficacy ($\bar{x} = 6.818$ (1.983)) to nurture AP. In particular, to get students to believe they can do well, formulating good questions for students, and getting all students involved in learning, teachers perceived that they possess quite a lot of self-efficacy ($\bar{x} = 7^+$).

Comparison: Factors that nurture AP

Table 3 below reports on a comparison of the means between the various questionnaire sections by using a t-test. The comparison established which of the factors that influence the nurturing of AP could be regarded as possible strengths or limitations.

Table 3:
T-test analysis of means factors to nurture AP

Questionnaire section	n	\bar{x}	S	t	p	d	Effect size
C: Attitudes and beliefs: Teaching and education	26	3.155	0.334	3.208	0.004	0.569	Medium
D: Current Teaching Practice	26	2.840	0.553				
C: Attitudes and beliefs: Teaching and education	26	3.155	0.334	2.533	0.018	0.580	Medium
G: Competence: Application of Teaching and Assessment Strategies	26	2.835	0.551				
D: Current Teaching Practice	26	2.840	0.553	-2.922	0.008	0.746	Medium
E: Perceptions: Management and Support of Teaching	26	3.253	0.540				
D: Current Teaching Practice	26	2.840	0.553	-2.207	0.038	0.564	Medium
F: Professional Development	26	3.152	0.476				

Questionnaire section	<i>n</i>	\bar{x}	<i>S</i>	<i>t</i>	<i>p</i>	<i>d</i>	Effect size
E: Management and Support of Teaching	26	3.253	0.540				
G: Competency: Application of Teaching and Assessment Strategies	26	2.835	0.551	2.953	0.007	0.758	Medium
E: Management and Support of Teaching	26	3.253	0.540				
H: Self-Confidence: Application of Teaching and Assessment Strategies	26	2.925	0.562	2.191	0.039	0.583	Medium

* Significance: $p < 0.05$
 $d = 0.2$ (small effect); $d = 0.5$ (medium effect); $d = 0.8$ (large effect)

DISCUSSION

Feasibility criterion 1: Rich and practical information revealing the teachers' perceptions about strengths and weaknesses in relation to the factors that influence the nurturing of AP.

Strengths

School principals and school management are regarded as proactive and supportive leaders of learning (Newton & Wallin, 2013; Hallinger & Lu, 2014). Yet, management and support seem to neither have a strong influence on how the teachers perceived the quality of their teaching practices nor on their competence and self-confidence to nurture AP adequately. A main study could scrutinise additional factors that might strengthen feelings of competence and self-confidence.

Weaknesses

Although teachers appear to hold positive beliefs and attitudes about nurturing AP among all students, their perceptions about their teaching practices to nurture AP indicate that they could be more effective. Similarly, their perceptions about their competency reveal that they are not highly competent in applying teaching and assessment strategies to nurture AP as they only possess some understanding of but lack the skills to teach the ACPs and VAAs.

Teachers held positive attitudes and beliefs about teaching and education to nurture AP do not align well with the type of teaching practices they apply. Limitations in this regard point to providing feedback to students that feed the learning process forward, question-posing by students, and student freedom to reason and communicate. The aforementioned elements of learning are crucial when nurturing AP. What seems puzzling is the apparent discrepancy between what teachers 'believe' and eventually 'do' in the classroom. The reasons for the perceived discrepancy between what teachers 'believe' and 'do' need further exploration to identify and address what might cause the inconsistency between 'believe' and 'do' when nurturing AP.

Although it is reassuring to note that some teachers regard it as important to develop thinking and reasoning skills, some teachers appear not to create opportunities for students to explain their thinking and to discover meaning in the subject matter. The reasons for the limited involvement of students during teaching and learning is a factor requiring further exploration.

Parents form an important pillar in nurturing AP (see Figure 1) (Eyre, 2016). The causes of limited parental involvement observed in the data should be gauged in greater depth. The involvement of community health and social services to support disadvantaged students seems disappointing and could pose a

limitation towards nurturing AP. Further investigation into contextual influences outside of the internal school domain, such as local authorities, health and social services, school districts and universities (Eyre, 2016; Sammons, 2012), is required, as these influences are regarded as critical factors in nurturing AP.

It is promising that the professional development of teachers is supposedly not left to chance (Eyre, 2016; Reynolds et al., 2016). A main study could confirm professional development as a possible strength factor towards nurturing AP. Collaboration among teachers at other schools, however, needs more attention. A main study inquiry could foreground the prevalence of individual teacher accountability versus communities of practice to enrich teaching practice (Danielson, 2016). Nevertheless, professional development does not seem to contribute a great deal to raising teachers' satisfaction with their current teaching practice. Further probing would be required to establish factors besides professional development that could influence contentment in relation to teaching practice. In addition, further probing into the quality of current professional development initiatives towards nurturing AP might reveal some limitations.

The participants mainly acknowledge the use of cooperative learning, charts and stories, but exclude the use of important student-centred teaching and assessment strategies for nurturing AP, such as Habits of Mind, Six Thinking Hats, Thinking Maps, Play, open questioning, self-assessment and peer assessment. A main study needs to confirm to what extent teachers are knowledgeable about specific strategies that nurture thinking skills and dispositions. The latter observation agrees with the self-confidence that the participants expressed in their application of transmission and reception teaching and presenting summaries of lessons to students, thus over-relying on the application of teacher-centred strategies.

Teachers' competence in teaching the ACPs and VAAs appears to be inadequate and confined mainly to teaching students to be intellectually confident and self-regulated, whereas seeing alternative perspectives and finding connections between information appear to be the most difficult to teach. Consequently, it could be argued that the nurturing of all the ACPs and VAAs might be neglected. The application of true enquiry-based teaching (Green & Murriss, 2014; Wegerif, 2013) and formative assessment (Earl, 2013) that places cognitive demands on students appear to be elusive, and their application needs to be confirmed in a main study.

Surprisingly, teachers rate their self-efficacy as between *some degree* to *quite a lot*, which does not align well with the lack of confidence noted in the responses above. Growth mindsets (Dweck, 2000; Eyre, 2016) in relation to developing student potential or ability for acquiring the ACPs and VAAs have evidently not yet become the hallmark of teaching in all the classrooms that took part in the research. Teachers' apparent uncertainty about their self-efficacy possibly influenced their perceptions that teaching to nurture AP is challenging (Wyatt, 2014), which could also be attributed to a fixed mindset concerning their own competence to nurture AP. It is likely that teachers' uncertainty about their self-efficacy might be linked to contextual factors, such as the different subject fields they have to teach, classroom size, curriculum overload, and the ability level of the students (Morris, 2017), of which the influence could be explored in a main study. Comparing teachers from different genders and cultural groups, and with different years of experience and qualifications in relation to their perceptions about factors influencing AP, could reveal greater depth in the data. This requires further investigation.

The participants' responses to the open questionnaire items support the responses obtained with the closed questionnaire items. The perceived restricted understanding of AP, the limited repertoire of teaching and assessment strategies to teach and assess for AP, viewing the teaching of ACPs and VAAs as challenging, and the divided opinions about the possibility of being able to reverse fragile ACPs and VAAs confirm the limitations noted in relation to current teaching practice towards nurturing AP.

The authors argue that the questionnaire constructs could be regarded as suitable, as they revealed in-depth information regarding the teachers' perceptions about the apparent strengths and weaknesses in relation to the factors that influence the nurturing of AP among all students, for which confirmation in a main study should be investigated.

Feasibility criterion 2: Suitability of the contents of the measuring instrument to establish the teachers' readiness to nurture AP

In order to examine the relationship between the independent contextual variables, a regression analysis was conducted. The relationship between perceptions about teaching practice, school management support, professional development, competency in applying teaching and assessment strategies, self-confidence in applying teaching and assessment strategies, competence in teaching ACCs and VAAs, and self-efficacy beliefs in relation to the dependent variable, namely attitudes about readiness to teach and educate in order to achieve AP, was established (see Tables 4 and 5).

Table 4:
Regression model

R	R square	Adjusted R	Standard error of the estimate	R square change	F change
0.784	0.615	0.447	0.255	0.615	3.652

According to Table 4, $R^2 = 0.615$, meaning that 61.5% of the total variation in nurturing the dependent variable *attitudes about readiness to teach and educate in order to nurture AP* can be explained by the following independent variables (contextual factors): (i) perceptions about current teaching practice, (ii) competency in the application of teaching and assessment strategies, (iii) school management and support, (iv) professional development, (v) self-confidence in the application of teaching and assessment strategies, (vi) competence in teaching ACCs and VAAs, and (vii) self-efficacy beliefs. Subsequently, 38.5% of the variation in the dependent variable *attitudes about teaching and education to nurture AP* is influenced by other independent contextual variables, which need further identification in follow-up studies.

The individual contribution of the contextual variables in the model and their significance are provided in Table 5 below.

Table 5:
Individual contribution of contextual variables

Model	B	Standard error	Standardised coefficients Beta	t	Sig
	0.923	0.897		1.029	0.319
Current teaching practice	0.268	0.108	0.436	2.482	0.025
Application: Teaching and Assessment Strategies	0.213	0.108	0.335	1.976	0.066
Management and support	-0.108	0.145	-0.149	-0.745	0.467
Professional development	0.083	0.140	0.136	0.595	0.560

Model	B	Standard error	Standardised coefficients Beta	t	Sig
Confidence: Application teaching and assessment strategies	0.005	0.121	0.009	0.042	0.967
Competence	0.322	0.139	0.437	2.317	0.034
Self-efficacy	-0.014	0.035	-0.082	-0.392	0.700

These results show that the following independent contextual factors probably play a significant role in nurturing AP, namely (i) perceptions about current teaching practice are statistically significantly related to the beliefs about teaching and education to nurture AP, as $p < 0.05 = 0.025$, as well as perceptions about competence in teaching thinking skills and dispositions, as $p < 0.05 = 0.034$.

The authors did not identify any problems related to the wording or ordering of the questions. The questionnaire is comprehensive but had to provide sufficient items initially that could be pruned to streamline future data collection (Thabane et al., 2010). A main study to investigate the influence of additional contextual factors with more participants will enable researchers to conduct a factor analysis to prune some of the questionnaire items. Given the strong influence that perceptions about current teaching practice and perceptions about competence in teaching thinking skills and dispositions possibly have on teaching and education that nurture AP, the questionnaire items could be selected and grouped more meaningfully to focus the attention on these two constructs.

RECOMMENDATIONS

Although this study was preliminary and conducted on a small scale, as researchers, the authors had an ethical and a scientific obligation to attempt publishing the results of their research endeavours (Thabane et al., 2010). The pilot study shows that the study can be done and offers some suggestions on how one might proceed for a main study to conclusively establish which factors play a role in nurturing AP. Although the findings cannot be generalised, they provide some insight into scale and instrument development for which internal consistency was confirmed and could therefore be applied to a larger study.

CONCLUSION

Education should move beyond producing individuals who can read, write and count. Teaching to nurture AP among all students is therefore not an option but a moral responsibility. All students have the right to receive quality education that (i) accommodates their needs, (ii) will enable them to take charge of their own learning journey, (iii) push them to explore and discover, (iv) encourage them to ask questions, (v) allow them to work through challenges, and, most importantly, (vi) give them wings to fly. In order to provide support to and equip teachers to successfully create classrooms that nurture AP, research to conclusively identify the factors that play a role in nurturing AP is vital.

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