Introducing Productive Pedagogies to Nigerian Mathematics Classroom through Collaborative Action Research Using a Community of Practice Approach

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Abstract. In this paper a group of four mathematics student-teachers came together to improved their teaching through a community of practice. They adopted one dimension each of the four dimensions that makes up the Productive Pedagogies framework to setup their classroom teaching practice. The findings of the study suggest that the four teachers achieved a great deal of success in their effort to improve their classroom teaching. Also Productive Pedagogies could be an important tool in improving the deplorable mathematics classroom in Nigeria particularly at the secondary school level. From the findings of this study the researcher conclusion suggested that, for effective mathematics classroom teaching, teachers are advised to adopt the Productive Pedagogies framework as an instrument for achieving quality classroom instruction. It is also suggested that collaboration among teachers should be encouraged. This will help the teachers work in groups and provide opportunity for teachers to talk about their teaching practices, criticise and model one another’s thoughts and perceptions about classroom teaching.

Keywords: Productive Pedagogies; Quality classroom Instruction; community of Practice

Introduction
When the word ‘pedagogy’ is used, it connotes a range of methods of organising ideas that teachers adopt to bring about quality classroom teaching. Mathematics educators in more than six decades had made concerted effort in addressing different perspectives to mathematics and its classroom instruction.

Looking back over these years one might infer that these learning theories that are highly influential in addressing the teaching of mathematics as keys to the development of strategies for a drastic changes to mathematics classrooms (Jaworski, 2006). This had led to the maturity of the theoretical considerations of mathematics education discipline in the developed and the developing countries. However, the position of mathematics teaching has remains theoretical and underdeveloped (Jaworski, 2006) particularly in Nigerian mathematics classrooms where the traditional teacher-centred teaching still prevail (Azuka: 2006; Kaka, 2007; Odilli: 2006).

Generally, several teaching techniques and or frameworks exist in literature that supports the development of theoretical underpinnings in relation to mathematics, Mathematics education and Mathematics classroom practice (Atweh, 2007). For example, first, the use of multi-tiered scale by teachers to demonstrate their level of expertise in achieving quality student outcome during mathematics classroom teaching (Anderson & Krathwohl, 2001) commonly referred to as Bloom Taxonomy (Bloom, 1956). Second, the "Howard Gardner's theory of Multiple Intelligences" which believed that "We are not all the same, we do not all have the same kinds of minds, and education works most effectively for most individuals, if...human differences are taken seriously" (Gardner, 1995, p.208).

Third, the Debono’s thinking Hats; which provides a model to help students think critically (de Bono, 1991). And finally, the Myer-Briggs Personality Types which burthened on how a designed personality test can assist a person identify some significant personal preferences in thinking about learning (Briggs Myers, McCaulley, Quenk, & Hammer, 1998).

These different frameworks possess some characteristics that may be similar to one another. However, none of these frameworks and strategies contains prescriptive teaching tools for the teacher. According to Atweh (2007) these teaching techniques or what he called tools are “used for reflection for teachers to critique their own pedagogy in order to designed alternative pedagogies” (p.98). Similarly, Atweh when further to suggest that none of these framework or teaching techniques is content based. Atweh noted that the educational research base on which these tools or framework of teaching are built are perhaps limited and
Focus more on higher order thinking and intelligence, constructed under the individualistic models of learning..., they don’t take into account the social dimension of learning..., While some of them might acknowledge individual differences in thinking style and preference to learning, they do not account for the effects of student background and their social context. (p.98)

Productive Pedagogies is an example of one of the attempts made by teacher educators and mathematics teacher educators to integrate research findings on effective teaching from a variety of areas to mathematics classroom practice, within education itself, and to classroom instruction. Specifically, Productive Pedagogies is a product of a long study on school reform undertaken in Queensland, Australia (Lingard, Ladwig, Mills, Bahr, Chant, Warry, Ailwood, Capeness, Christie, Gore, Hayes, & Luke, 2001). The basic aim of the framework was to enhance the quality of classroom teaching. It refuses the idea placed on a teaching environment that defined quality education in terms of students’ outcomes demonstrated in a standardized test of basic skills (Zyngier, 2005). It however, defines students outcomes in terms of a set of standards based on some powerful, important ideas and concepts which could be related to the students’ experiences and the environment around them (Atweh, 2014, Zyngier, 2005). This suggests that Productive Pedagogies framework is concerned with how to help students learn and how to enhance both their academic and social behaviours during classroom instruction.

The developers of Productive Pedagogies framework (Lingard et al. 2001) postulated four dimensions which described and characterised what could be termed quality teaching (Atweh, 2014). These includes; Intellectual Quality, Connectedness, Supportive Classroom Environment, and the Recognition of Difference. Each dimension was further described by a number of elements (Lingard et al. 2001).

A brief description of the dimensions suggests that Intellectual Quality is an important dimension in achieving quality classroom teaching. Previous research studies suggested that high Intellectual Quality classrooms assist in improving students’ performance during classroom instruction (Boaler, 1997; Hayes, Mills, Christie, & Lingard, 2006). Connectedness attempts to make mathematics more relevant to students’ life by connecting students’ life experiences either at home or in the society with their lives in school (curriculum and content) or other school subjects. This attempt is with the view to making mathematics more ‘relevant’ and providing students with more meaningful life experiences (Atweh, 2007). The Supportive Classroom Environment dimension is needed to create and enabled learning environments involving support and engagement in order to foster high Intellectual Quality and Connectedness. Finally, on Recognition of Difference, Hayes et al. (2006) was of the view that teachers should give more emphasis to recognize the diversities that exist among students with different cultural backgrounds and beliefs during classroom instruction in order to provide an equitable outcome for all students.

The framework has become a focus of research and curriculum development efforts for some years now. This is demonstrated in several projects around the
world. For example, in its efforts to improve achievement and interest in the study of mathematics and other subjects across all school levels, the Queensland State Government initiated the New Basic Project in 2001 (Department of Education, Training and Employment, 2001). The New Basics Projects provided new curriculum organisations, authentic assessment tasks, and a framework for designing teaching called the Productive Pedagogies (Tanko & Atweh, 2012). Similarly, Zingier (2005) indicated that the Productive Pedagogies framework has been adopted in many states and regions across Australia as in New South Wales, Tasmania, South Australia and Victoria. Gore, Griffiths and Ladwig, (2002) also used Productive Pedagogies to prepare a series of professional development activities for in-service teachers.

There are several other research studies that have utilised the Productive Pedagogies framework in teacher education across the globe. For example, Alsharif and Atweh (2012) in Saudi Arabia modelled the Productive Pedagogies framework in preservice teachers’- education programs to develop their pedagogical practices during their field experience. Tanko and Atweh (2012) used the Productive Pedagogy framework to improve the teaching and learning of practical numeracy with adult learners in United Arab Emirates. Similarly, Productive Pedagogies framework had been used to introduce social justice practices in classroom instruction (Bacon, 2012; Bartel, 2012; Tanko, 2012). Other studies used the Productive Pedagogies framework to increase preservice teachers’ awareness of teaching pedagogies that could improve classroom engagement, participation, and to implement critical reflection among teachers and students (Aveling & Hatchell, 2007; Sorin & Klein, 2002; Wilson & Klein, 2000; Zingier 2005).

Though, certain principles of Productive Pedagogies had been explored by Nigerian educational researchers. There is no evidence in literature that the concept had been explored as a whole in Nigeria classrooms. For example, Bature and Bundot (2009) worked on setting the classroom climate for effective mathematics classroom instructions which could be regarded as the Supportive Classroom Environment of Productive Pedagogies. Similarly, Kalu (1997) worked on classroom interaction patterns among secondary schools students during classroom instruction which could be regarded as substantive conversation of Intellectual Quality dimension of Productive Pedagogies. While Ajunwon (2012) worked on socio-cultural identities found in different students especially in mathematics classrooms which could be viewed as inclusivity of the Recognition of Difference dimensions of Productive Pedagogies.

In this current study, the researchers adopted the Productive Pedagogies framework because on the following potentials. First, the Productive Pedagogies framework is believed to provide opportunities for individual teachers to reflect on their own lessons, either at the planning stage or after conducting the class, using the four dimensions of the framework (Atweh, 2007). The teacher can ask herself/himself whether the lesson demonstrated high quality content in its presentation or whether the lesson provided enough support to students, or whether the increase recognition of differences among
students such as social and cultural groups in the classroom helped improved students learning and engagements. Second, Productive Pedagogies framework is believed to have the potential of helping teachers’ obtain or provide critical colleagues’ comments on each other’s’ classroom teaching. This allows the teacher and the classroom observer to enter into substantive conversation about teaching and practices. It also has the potential to be used in collaborative planning for the curriculum in the school for one level in one subject, or across levels and subjects. Third, the researchers believed that the Productive Pedagogies framework can be used for the professional development of Mathematics teachers and as a form of induction to both preservice and in-service teachers in the schools, which could be useful strategy for giving feedback to teachers for discussions about promoting good and quality classroom teaching.

Fourth, the Queensland School Reform Longitudinal Study pointed to certain conditions that make the research on Productive Pedagogies open to other social settings. First, they assert that: each dimension of Productive Pedagogies is readily defended in an ideal setting and in the context in which it was developed. However, this depends on the prevailing circumstances surrounding the classroom in terms of classroom environments and other socio cultural forces. This makes the research on Productive Pedagogies open to further investigations particularly in other social-cultural environments. Second, the four dimensions of Productive Pedagogies may be good enough for students to do well in school; there is however, no quality evidence to believing that all the dimensions are equally required for success in all socio-cultural settings (Lingard at al. 2001). Third, different classroom activities may reflect some of these dimension more than others (Atweh, 2007) for example, some classes may demonstrate low level Intellectual Qualities, while others demonstrate high level of Intellectual Quality with the attempt to connect learning to students’ life experiences.

Therefore, one may conclude by saying that, Productive Pedagogies may work in one environment and fail to work in other environments depending on the prevailing circumstances surrounding the environment. This informed the need for this research to investigate the process and the effect of introducing Productive Pedagogies into Nigerian secondary schools mathematics classrooms with the aim to improving mathematics teachers’ classroom teaching. This paper discusses how Productive Pedagogies framework was introduced to four mathematics teachers in an attempt to improve their teaching practices in a community of practice or through an approach called Collaborative Action Research. The following research objectives were adapted to this research.

1. To determine the teachers implementation of Productive Pedagogies framework during their classroom instruction.
2. To determine the improvement observed in the teachers classroom instruction using the Productive Pedagogies Classroom Observation Manual developed by the Queensland School Reformed Longitudinal Study.
3. To determine the perception of the teachers on the role of Productive Pedagogies in improving their teaching practice using the community of practice.

Methodology

This research adopted the Collaborative Action Research approach to investigating the classroom teaching of four teachers working in the community of practice to improve their teaching using Productive Pedagogies framework. Collaborative Research is a form of research that is authentic and meaningful to teachers. It is conducted by teacher in their own classroom, to identify their challenges and find possible solutions to such classroom problems. It helps the teacher to pick up issues suggested in academic circles, and weave them in his own classroom to uncover new strategies to be used to improve his/her teaching practices (Ferrance, 2000, p.13; Johnson and Button, 2000; Sagor, 2004).

Four preservice mathematics teachers of Jimmy, Jackson, Jerry and Jennie (pseudonyms) were conducting their final year research project in a community of practice. They decided to each pick one dimension of the Productive Pedagogies framework to set their classes in their effort to achieve quality classroom teaching. These four teachers decided to adopt the Productive Pedagogies Classroom Observation Manual developed by the Queensland School Reformed Longitudinal Study commissioned by the Education Queensland (2001) as an observational tool during their classroom instruction. The 24-page manual contains explanations and examples of all 20 elements (see Appendix) of the Productive Pedagogies along with a 5 point Likert type scale. The teachers used the elements and the dimensions of Productive Pedagogies as outlined in the Productive Pedagogies Classroom Observation Manual to determine their level of implementability of the framework during their classroom instruction.

The data generation period was divided into three cycles of two weeks. After each data collection session the teachers will meet for a period of another two or more hours to reflect on their practice, discuss the challenges they faces and possible solutions proffered before progressing into the next cycle or section. The quantitative data generated during the research were used by each of the participating preservice teachers for their final year research project. However, for this paper, the qualitative data collected were coded using the grounded theory approached to data analysis. While the quantitative data which constituted the major data used were collated and analysed using descriptive and inferential statistics to determine the improvement of each of the participating teachers across the three cycles or sections.

Result
The results of the classroom teaching of the four mathematics teachers were analysed independently. This is because the teachers adopted different dimensions of the Productive Pedagogies framework to improve their classroom instructions. Secondly, since they were working in a community of practice, the picture of how each of the teachers implemented his/her dimension needed to be analysed separately.

Response to Research Objective 1

To determine the participating teachers implementation of Productive Pedagogies framework during their classroom instruction using the Productive Pedagogies Classroom Observation Manual developed by Queensland School Reformed Longitudinal Study.

![Figure 1: Jimmy's Classroom Instruction](image.png)

The figure suggested that Jimmy’s implementation in each element show a progressive improvement from cycle to cycle. From the figure, Jimmy demonstrated competences in all elements on the three cycles with particular improvement in higher order thinking and substantive conversation in cycle three. However, Knowledge as problematic was the elements with least competence in implementation particularly in cycle 3. The progressive improvement could have been achieved as a result of the reflections meetings after each cycle.
Figure 2: Jackson's Classroom Instruction: The figure above demonstrated the implementation of Jackson’s classroom instruction using the Connectedness dimension of Productive Pedagogies. The connectedness dimension which is also called relevance has four elements: - Problem Based curriculum, connectedness to the world, Background knowledge and Knowledge integration as stated in the appendix below.

The figure suggested that Jackson had a progressive improvement in all the elements of Connectedness with particular improvement in connectedness to the world and problem based curriculum. This suggested that Jackson pays particular attention to helping his students solved real life related problems. He also gave them the freedom to solved high intellectual quality problems that had varied approaches to solution. Background knowledge and knowledge integration where the list implemented elements in Jackson classroom practice. Perhaps reasons to these could be adduced to his inability to relate his mathematics content to other subjects as observed by his colleagues. This notwithstanding does not imply that he did not relate them well but rather they were not rated as high as the other elements in his dimension. However, this progressive improvement in Jackson classroom instruction in all the elements perhaps was as a result of the reflective meetings between the teachers during the research period. This period was dedicated to discussing the challenges faced in the previous cycles and how best it could be achieved in the next cycle.
Figure 3: Jerry’s Classroom Instruction: The figure above demonstrated the implementation of Jerry’s classroom instruction using the Supportive Classroom Environment dimension of Productive Pedagogies. The dimension has the following elements as described in the table below: explicit quality performance criteria, students’ direction, self-regulation, academic engagement, and social support.

The figure demonstrated improvement in Jerry’s classroom instruction from cycle to cycle. The figure also revealed no improvement in social support between cycle 1 and cycle 2. It was also observed that there was a high level of students’ self-regulation in cycle 3. However, the students did not fully have the control of the classroom activities as students’ direction was shown to be least implemented in cycles 1 and 3. This does not imply that Jerry did not improve in his implementation but rather some elements were better implemented than others. The implementability of the elements and their effectiveness was as a result of the explanations given in Jimmy and Jackson classroom instruction. There was a very high observation on self-regulation also in Jerry classroom instruction in cycle 3. This perhaps was as a result of the topic Jerry was handling coupled with the reflection meetings.
Figure 4: Jennie’s Classroom Instruction: The figure above demonstrated the implementation of Jennie's classroom instruction using the Recognition of Difference dimension of Productive Pedagogies. This dimension is divided into 5 elements thus: - Group Identity, Active citizenship, Inclusivity, narratives and cultural knowledge.

The figure demonstrated that Jennie had a progressive improvement in the implementation of Recognition of Difference dimension of Productive Pedagogies, with particular improvement in active citizenship in cycle 3. This suggests that Jennie recognises the differences that exist among students in her classroom and uses them to improve her classroom instruction. Active citizenship was observed to be higher than all other elements in Jennies’ classroom practice might be as a result of the preservice provides a more democratic setting in her classroom instruction. As discuss above, other factors that could influence her performance were not far from what is said about the other researchers.

Response to Research objective 2

To determine the improvement observed in the participating teachers classroom instruction using the Productive Pedagogies Classroom Observation Manual developed by Queensland School Reformed Longitudinal Study
The figure above demonstrated the picture of the participating teachers’ classroom instruction across cycles which suggested improvement in classroom teaching of all the teachers across the cycles. Their performance across cycles also suggested uniform performances as they fall within the same range in all the ratings except in cycle one where Jerry’s performance was a bit better than the other teachers. Factors that are likely to bring about better performance among the teachers perhaps could be as a result of the years of teaching experiences or the dimensions selected for the research. However, all the preservice teachers showed potentials in their effort to improve their classroom instruction. Uniformity in their performance could also be as the result of the reflection meetings as stated in research objective 1 above.

Response to research objective 3

To determine the perception of the teachers on the role of Productive Pedagogies and Collaborative Action Research in improving their teaching practice using the community of practice.

Data collected suggested that the use of Productive Pedagogies framework was not the only factor that helped improve the teaching effectiveness of the preservice teachers. The teachers were of the view that discussions held after each cycle during their reflection meetings contributed a lot to helping them see the concept of Productive Pedagogies and its implementations in new dimensions. The reflection meetings gave them the opportunity to look back on what they did which helped them look forward on what they needed to do to
improve their practice in the next cycle. For example, one of the teachers was of
the view that,

_The way the program was structured emphasises very challenging learning
objectives, we received and provided support to one another, and not only is
feedback given throughout the program but we actively sought for it, not only
from the researcher, but also from colleagues._ (Jerry: Research Journal)

Another teacher said,

_The experiences of discussing with colleagues help my problem solving skills, it
provided opportunity for cooperative learning, and there is an enhanced level of
immediate feedback from colleagues during the implementation, particularly,
during reflection meetings._ (Jennie: Research Journal)

Similarly the preservice teachers suggested that the framework help reduced the
domineering approach to teaching, commonly observed in most Nigerian
mathematics classrooms. For example one of the teachers was of the view that,

_The setting that makes mathematics teachers have the monopoly of knowledge
and students depending on them for everything does not portrayed good
Productive Pedagogies classroom. But in a situation where we are teachers and
we are students; makes our students relax..., the teacher brings the knowledge
and the students analysed and discussed it … this tends to boast my student’s
confidence and encouraged independent learning among them._ (Jennie: Research
Journal)

From the comment of the preservice teacher above suggests that using the
Productive Pedagogies framework in mathematics’ classroom help reduced the
mathematics phobia that is commonly observed among secondary school
students in most mathematics classrooms in Nigeria. Every member of the
classroom community has a role to perform during the classroom instruction as
against the teacher centred instruction that had pervaded most of the Nigerian
mathematics classrooms for decades. Jackson acknowledged this by saying,

_My classroom used to be like a graveyard as students dare not talk, but to my
amazement as I introduced Productive Pedagogies framework in my class, the
class naturally became interactive, the students interacted in their groups, before
you know, the solution to the problem is gotten._ (Jackson: Research Journal)

Conclusions

The findings of the study suggested that the used of Productive Pedagogies
framework by the teachers improved their teaching effectiveness. It brought
about positive changes in their classroom instructions. This was demonstrated
in figures 1, 2, 3, 4 and 5. The figures showed positive improvement from one
cycle to the other. This improvement according to the teachers was as a result of
adopting the Productive Pedagogies framework in their classroom teaching as
observed in research objective 3. These tallies with the findings of most notable
researchers on Productive Pedagogies which were of the view that Productive Pedagogies framework had been used to help mathematics teachers improved their mathematics classroom instruction (Bacon, 2012; Bartel, 2012; Tanko, 2012). Other researchers also observed that the Productive Pedagogies framework could also be used to increase teacher awareness of teaching pedagogies that could improve classroom engagement and participation. This helped bring about critical reflection among teachers and their colleagues on their teaching practices (Aveling & Hatchell, 2007; Sorin & Klein, 2002; Wilson & Klein, 2000; Zyngier 2005).

On using Productive Pedagogies as a tool for improving mathematics classroom instructions, the findings of the study suggest that Productive Pedagogies seems to be an important tool for effective classroom instruction as it makes teachers and students responsible for what goes on in the class during classroom instruction. Every member of the classroom community has a role to play during the classroom instruction as compared to the traditional teacher-centred approach that has dominated most Nigerian mathematics classrooms (Azuka: 2006; Kaka, 2007; Odilli: 2006). These findings also coincided with the findings of Atweh (2014) who asserted that Productive Pedagogies can be used to improve mathematics teachers teaching effectiveness, because they provide a vocabulary for teachers and their students to interact during classroom instruction.

Similarly, the findings of the study also suggests that it was not only the use of the Productive Pedagogies framework alone that helped improve their teaching effectiveness, but that, the discussions held after each cycle during their reflections meetings contributed a lot to helping the teachers see the concept of Productive Pedagogies and their implementations in new dimensions. The reflection meetings gave them the opportunity to look back on what they did, which helped them look forward to what they needed to do to improve their practice. This supports the Collaborative Action Research principles of reflections which postulate that reflection helps improved teachers performance during classroom instruction, provides opportunities for teachers to discuss problems observed and suggest possible ways to resolve them (Sagor, 2004).

This also suggested that collaboration among teachers provide opportunity for teachers to talk about their classroom instruction and also provides a framework for reflection after classroom instruction with colleagues (Aveling & Hatchell, 2007; Sorin & Klein, 2002; Wilson & Klein, 2000; Zyngier 2005). Similarly, studies has also demonstrated that participating in Collaborative Research has been found to be one of the most important tools for effecting positive changes in teachers’ classroom instruction. This is exemplified by teachers’ improvement in their practice, self-reflection, improved students overall learning and enhances mathematics teachers’ classroom teaching effectiveness (Ferrance, 2000; Johnson & Button, 2000; Ross, Rolheiser, & Hogoboam-Gray & Campbel, 2002; Sax & Fisher, 2001).

In conclusion the findings of this study suggest that, for effective mathematics classroom teaching, teachers are advised to adopt the Productive Pedagogies
framework as a tool for achieving quality classroom instruction. It is also suggested that collaboration among teachers should be encouraged. This will help the teachers work in groups and provide opportunity for teachers to talk about their teaching practices, criticise and model one another’s thoughts and perceptions about classroom teaching.

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Appendix

The Dimensions of Productive Pedagogies and their Associated Elements
Summarised by Atweh (2007)

<table>
<thead>
<tr>
<th>ELEMENTS OF PRODUCTIVE PEDAGOGIES</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td><strong>INTELLECTUAL QUALITY</strong></td>
<td></td>
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<tr>
<td>Higher Order Thinking</td>
<td>Involves transformation of information and ideas. This transformation occurs when students combine facts and ideas to synthesize, generalise, explain, hypothesize or arrive at some conclusion or interpretation.</td>
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<tr>
<td>Deep Knowledge</td>
<td>Deep knowledge is concerned with the central ideas of a topic or discipline which are judged to be crucial to it.</td>
</tr>
<tr>
<td>Deep Understanding</td>
<td>Deep understanding is indicated when students grasp relatively complex relationships between the central concepts of a topic or discipline. They can produce new knowledge by discovering relationships, solving problems, constructing explanations and drawing conclusions.</td>
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<tr>
<td>Substantive Conversation</td>
<td>There is considerable interaction among students, and between teacher and students, about the ideas of a substantive topic. The interactions are reciprocal and promote shared understanding.</td>
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<tr>
<td>Knowledge as Problematic</td>
<td>This involves an understanding of knowledge not as a fixed body of information, but rather as being constructed, and hence subject to political, social and cultural influences and implications.</td>
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<tr>
<td>Meta-language</td>
<td>Such instruction incorporates frequent discussion about talk and writing, about how written and spoken facts work, about specific technical vocabulary and words, about how sentences work or don’t work (syntax, grammar).</td>
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<tr>
<td><strong>SUPPORTIVE CLASSROOM ENVIRONMENT</strong></td>
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<tr>
<td>Student Direction</td>
<td>Students influence the specific activities or tasks they will do in a lesson or how they will undertake them.</td>
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<td>Social Support</td>
<td>Social support is characterised by an atmosphere of mutual respect and support between teacher and students, and among students.</td>
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<tr>
<td>Academic Engagement</td>
<td>Students are engaged and on task. They show enthusiasm for their work by raising questions, contributing to group activities and helping peers.</td>
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<tr>
<td>Self-Regulation</td>
<td>The direction of student behaviour is implicit and self-regulatory.</td>
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<tr>
<td>Explicit Quality Performance Criteria</td>
<td>The criteria for judging the range of student performance is made explicit. Using tools such as rubrics.</td>
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<tr>
<td><strong>CONNECTEDNESS</strong></td>
<td></td>
</tr>
<tr>
<td>Knowledge Integration</td>
<td>This occurs when explicit attempts are made to connect two or more sets of subject area knowledge.</td>
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<tr>
<td>Background Knowledge</td>
<td>Opportunities are provided for students to make connections between their own background knowledge and experience and the topics, skills and competencies they are studying and acquiring.</td>
</tr>
<tr>
<td>Connectedness to the World</td>
<td>This describes the extent to which the lesson has value and meaning beyond the instructional context, making a connection to the wider social context within which students live.</td>
</tr>
<tr>
<td>Problem-Based Curriculum</td>
<td>Such curriculum is one in which students are presented with specific practical, real or hypothetical problems to solve. Problems are defined as having no single correct solution, requiring the construction of knowledge by the students and requiring sustained attention beyond a single lesson.</td>
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<tr>
<td><strong>RECOGNITION OF DIFFERENCE</strong></td>
<td></td>
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<tr>
<td><strong>Cultural Knowledge</strong></td>
<td>A range of cultures, an acknowledged and given status. Cultures are valued when there is implicit appreciation of beliefs, languages, practices and ways of knowing.</td>
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<td>------------------------</td>
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<tr>
<td><strong>Group Identity</strong></td>
<td>Teaching practices build a sense of community and identity.</td>
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<tr>
<td><strong>Narrative</strong></td>
<td>The use of narrative in lessons involves an emphasis both in teaching and in student responses or personal stories, biographies, historical accounts and literary and cultural texts.</td>
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<tr>
<td><strong>Inclusivity</strong></td>
<td>Inclusive classroom practices intentionally acknowledge, support and incorporate the diversity of students’ diverse backgrounds, experiences and abilities.</td>
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<tr>
<td><strong>Active Citizenship</strong></td>
<td>This element involves acknowledging that in a democratic society all individuals and groups have rights and responsibilities.</td>
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