STUDENTS AND THEIR LEARNING: INITIATIVES AND PARTNERSHIPS

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Abstract

Teaching today can, in many respects, be considered as a scientific pursuit, irrespective of the discipline or content. Ironically, many of the challenges of teaching in the twentieth century are the result of scientific endeavour. The increased availability of technology in all aspects of everyday life, the unprecedented rate of change and growth of knowledge are certainly confronting enough for those involved in classroom interactions. Perhaps one of the controversial issues in education today, however, centres around the nature of intelligence itself; how best to develop pedagogies that accommodate the findings of the field of cognitive science and a sound understanding of the nature of intelligence, particularly multiple intelligences.

This paper discusses the implementation of differentiated programs of teaching and learning utilising Gardner's Multiple Intelligences Theory and focussing particularly on developing students' self knowledge in regards to their relative strengths and limitations as learners. It describes an Action Research project that was implemented to strengthen the learning strategies of students aged 8-10 years in a primary setting. The findings evidence not only increased intrapersonal intelligence and improved success in educational outcomes: but also increased efficiency in students' motivation and work skills. The opportunity to 'make meaning' of their learning and develop their own strategies for problem solving had considerable impact on these students' perceptions of themselves as learners. Although conducted with a literacy focus, many of the benefits of this project were demonstrated across all subjects that comprise the primary curriculum. It is possible that a similar approach to traditionally structured subjects such as mathematics and science could produce more successful learning outcomes and attitudes for primary students. However, despite the overall success of the project, the intervention raised some serious questions about the traditional role of students and their capacities to engage in projects that require them to make choices. The duration of this intervention project minimised the negative impact of the passive role that students have traditionally adopted, as the students had time to develop new strategies and perspectives of their roles of students in the twenty first century. Had this not been the case, the results could have been much less positive and the importance of students developing sound knowledge of themselves as learners misunderstood. Additionally the importance of students having the skills to make decisions in a formal, educational context may have easily been overlooked.

Key words: *challenges of teaching, Multiple Intelligences Theory, educational context.*

Introduction

The rate of change in today's society has led to the realization that the model of teaching and learning that evolved to meet the needs of industrial society requires considerable transformation if it is to support the educational needs of students today (Dickinson, 2002 p.10; Marshall, 1999).

The means by which education can be transformed to equip students with the skills they will need to survive in the future is the focus of much of debate and dispute in educational circles. What is clear is that educators, students and society in general will have to redefine what it is to be a student, what constitutes effective teaching and learning and what types of knowledge, skills and strategies are considered important for successful learning. To consider all teaching as a scientific pursuit is not an unreasonable thought.

Educationalists are not only constantly challenged with updating their own technological skills to inform or match those of their students, they must engage in various other scientific specializations in manner that was previously not important. The findings of cognitive science (Posner, 2004; Reese, 1998) impacts on understandings of how the learning g process is facilitated. A more inclusive understanding of what is meant by intelligence (Gardner, 1983, 1993a, 1993b, 1997, 1999b; Sternberg, 2004; Sternberg et al., 2000; Sternberg & Kaufman, 2006; Sternberg & Williams, 1998) mandates the planning, implementation and managing of differentiated programs of work to enable all students to have an equitable opportunity to be successful. The 'other intelligences' (Goleman, 1995; Harvey, 2005; Hedlund & Sternberg, 2000; Mayer & Salovey, 1997; Mayer, Salovey, & Caruso, 2000; Mayer, Savoley, & Caruso, 2004, 2004a) are becoming increasingly important considerations in debates regarding factors to improve student learning. Added to the current issues, writers are advising the types of changes that will need to be made to educational at various levels in order to prepare students for the society in which they will live and work.

Burchsted (2003) urged managers and policy makers for schools and systems to 'study the future' in an effort to equip students with skills, strategies and perspectives that will enhance their abilities to succeed in the face of challenges and changes. She proposes five 'elements' that characterize this ongoing process of 'studying the future'. These involve developing considerable competencies in skills such as identifying, monitoring, exploring, describing various aspects of society in addition to planning and implementing goals. Henderson (2002) also discussed using ' special and temporal frameworks'(Henderson, 2002 p.1) to create a positive image of the future. She took a retrospective view from 2050 and presented a picture of a world that has risen to meet the multiple challenges inherited from the previous century, concluding with notice that 'a paradigm shift to map these changes was required and the curricula of all schools and universities have changed accordingly' (Henderson, 2002 p.12).

Dickenson, (2002) offered more guidance in these areas, tracing the key programs and components that impact positively on teaching, learning and assessment. These included an understanding that all students are capable of learning and are capable of learning more effectively than may have been originally understand. Gardner (2006) also looked to the future in what he terms an 'ambitious, even grandiose' scheme of cultivating five minds for the future (Gardner, 2006 p.153). In addition to the disciplined mind (Gardner, 2000c), Gardner explored the development of synthesizing and creating, respectful and ethical minds as a means of coping with future changes and challenges. He provided two 'legitimate' reasons (Gardner, 2006 p.10-11) for changes in educational practice; firstly, current educational practices are not actually working and secondly, that the consequences of significant changes in the world may demand that educational endeavors are refashioned to 'stretch' the minds of learners in ways that have not been previously considered important educational goals, capacities or competencies.

Implications for Education

Although these writers offer differing perspectives and precise definitions of the skills and competencies that will be required for individuals to live comfortably in the future, there is a common theme throughout; people will have to improve their thinking skills. Effective cognition in some specific domains will be the currency of the future and this will bring considerable challenges for everyone involved in educational policy making, leadership and practice, given the degree of student diversity that exists in any group of learners. However, it appears that improvement in thinking skills may be a reasonable expectation. Henderson (2002) notes that presently most humans use approximately 10% of their brains, so the further development of cognitive skills is well within grasp for most people, but how exactly will this development be facilitated? Smyre

(2000 p. 5) poses the question 'How do we introduce into educational curricula the need to think about future trends as well as transforming underlying assumptions?'

Within the frameworks of policies and systems, much of the responsibility for supporting the development of thinking skills will lie with classroom teachers. Teachers are being asked to face the challenges of developing and implementing pedagogies that support learning for all students irrespective of individual differences, provide realistic opportunities for success and encourage appropriate, educational risk taking. Such pedagogies would, of necessity, operate in rich, supportive, learning environments and provide students with the opportunities to 'stretch' their minds as individual learners under the guidance of an appropriate mentor. What needs to be explored are ways to develop pedagogies such as this within the limitations of present educational systems and restraints. These also must be developed within the context of the characteristics of the learners. The answer must, at least, partially lie in the planning and implementation of appropriate, differentiated learning programs in the primary years of education (Dempsey & Arthur-Kelly, 2007; H. McGrath & Noble, 1995a, 1995b, 1998; H McGrath & Noble, 2005; Tomlinson, 1999, 2000a, 2000b) and provision of opportunities for students to develop an understanding of their own thinking and learning. Implicit in this is the understanding that students construct knowledge in an individual manner and that they would need to have some input into proposed curriculum differentiation.

The Study

This study (Sellars, 2003, 2006) investigated students' potential to develop increased, accurate knowledge of themselves as learners and to use this knowledge to improve their academic outcomes in literacy provided considerable support for the possibility of implementing differentiated programs to improve learning. It investigated eight and nine year old children's capabilities to develop skills in the intrapersonal intelligence domain defined by Gardner (1983; 1993a). The group of twenty seven 8-10 year old students was introduced to a program specifically designed to foster their self-knowledge as learners and their self-management skills in the English learning environment. All but two of the students had been previously assessed, using school based measures, as achieving below the average expectations in their literacy skills. The program was designed as a ten month Action Research (Buschman, 2001; Mills, 2000) project and implemented as a co-operative program between the two classroom teachers and the teacher researcher in a country Catholic systemic school.

Implementation

The initial step was to identify students' strengths and limitations, as perceived by the students. In order to accomplish this, a *Multiple Intelligences Profile* (H. McGrath & Noble, 1995a) was compiled for each student participant. The intervention was planned using the information from the students' MI Questionnaires and programmed differentiating content and cognitive complexity, utilizing the Revised Bloom's / Gardner's matrix (McGrath & Noble, 1995a, 1995b, 1998). The students were then introduced to a range of activities that could support their relative strengths. As many of the participants had identified the bodily kinaesthetic intelligence domain as an area of relative strengths, games and other multi sensory activities were planned to accommodate teaching and learning in literacy. Students were encouraged to use their self knowledge to negotiate a learning environment that would best suit their own learning needs. For example, they could negotiate basic structures such as seating and classroom arrangements for resources. They could also nominate to wear headphones to block out student chatter and work noise. The next component of the intervention required students to set learning goals in English using a Smart Goals Contract (H. McGrath & Noble, 2003). Students were encouraged to explore activities based on their relative strengths as a means for achieving their own learning goals and as a starting point for students to identify personal learning strategies. It focused on providing real choices for students, both in the personal literacy goals they set and in the manner in which they could achieve these goals.

Many of the student activities that would be traditionally organized by the teachers were,

instead, developed by the students. An example of such an activity was the development of questions appropriate to assess students' levels of understanding of readers, either the shared book the teacher read to the class or the student readers used for guided reading. Instead of the teachers determining what needed to be asked, students could choose, as an individual, group or paired activity, to develop questions for others and themselves using the starter sentences developed from the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2000) levels of cognitive processes, which were placed on the faces of a cube. A set of cubes comprised six cubes. These were homemade on two colours of cardboard, one for questions that required higher order thinking skills to find an answer (analysing, evaluating and creating) and the other for those that required lower order thinking skills (remembering, understanding and applying) to answer. Again, students had a choice regarding how complex the questions were required to be. They could select a cube of either colour to work with in the activity. An activity they designed during their work was to arrange themselves in groups and award themselves learning points if they could find any 'questions' that were not actually grammatically correctly structured. They gave themselves extra points if they could reconstruct the incorrect 'questions' into grammatically correct questions.

The students were given considerable support in the classrooms. This was necessary for these students to take more initiative in the learning process, in activities that encouraged peer interaction, in decision-making and become more independent as many of their prior leaning experiences had been relatively unsuccessfully and were frequently described by the students as 'boring'. The completion of one goal was followed by the setting of another, so to support this ongoing activity, achievable goals were brainstormed with each group of students and a list compiled of these ideas. This was then displayed in the classrooms as a reference for those students who were uncertain of what they would like to set as their next goal. Other strategies were in place to support reflection and self evaluation. Examples of what may be useful, informative responses for the learning journal were again brainstormed with the students and a written record of suggestions was displayed for student support. None of these suggestions was compulsory, they were developed to scaffold student learning.

Results of Research

The students' interpersonal intelligence scores showed a significant increase when the profiles compiled in November were compared to those compiled in February. The paired *t*-test showed that p = .000, indicating that these results had high probability of reflecting a true result as there was no indication of possibility of error (Levin & Fox, 2000). This provided the evidence that the students recorded higher scores for interpersonal intelligence in November than they recorded in February and that the *t* score ($t = 9.052$) was sufficiently high to indicate that the difference in scores was significant. The anecdotal records compiled by the teacher/researcher, casual teachers' comments that were recorded by the colleague teachers the participating teachers' own records showed that the students were demonstrating increased on task time and improved organisational skills and strategies during completion of English tasks. The data gathered during the interview process showed that the students' perceptions of what was required to learn successfully were gradually changing. Instead of comments relating to being smarter, getting more work to do (!) and comments indicating that the students really had no idea; responses began to include strategies such as concentration, having somewhere quiet to work and making more effort to understand and complete the tasks.

The records of individual learners provided evidence regarding their improved skills and strategies. Students were able to achieve their goals. These goals were being achieved by the use of strategies that the students themselves had nominated and evaluated as useful or not for each of them individually. Students further developed these strategies so that they were applicable to an increasingly wider variety of tasks and goals. So what students actually did reflected their increasing self- knowledge as learners. In the initial stages of the study some students also adapted their goals as they began to realize that those particular goals were not realistic for them at that time. This strategy became increasingly less and less used as the students became more proficient at determining exactly what they could realistically achieve within nominated timeframes. When

individual students had two goals in place concurrently, they demonstrated their understanding of their individual capacities to achieve some goals more quickly than others.

All the students achieved improved academic success when their English work was assessed by their classroom teachers using the criteria provided by the Outcomes and Indicators of the mandatory curriculum documents for teaching primary school English. This was nor entirely unexpected. As the intervention progressed, the students completed more English tasks, developed better judgement about their own capacities to set, monitor and achieve realistic learning goals and set about their work in ways that reflected their personal learning preferences. As they began to be less reliant on a learning environment that was mainly teacher directed, they gradually began to take more responsibility for their learning. This evidenced in the teachers' assessment records, anecdotal records and student responses to the interviews.

During the final weeks of the study the students were becoming increasingly pro active in their suggestions to support their learning. One example was the 'Steps to Success' display. Initiated and arranged by students to help them stay focussed whilst attempting to complete more complex goals, the display comprised large footprint cut outs arranged in one direction only. The display was available to anyone what wished to record that they have achieved a part of a bigger, more long term goal. An increasingly more collaborative and cooperative culture became characteristic of the students participants and became an important scaffold for students struggling to preserver with difficult tasks and complex goals. The students were interviewed individually by the teacher/researcher at equal intervals three times during the study to ascertain if the students were becoming more aware of their own learning preferences and developing their own strategies to overcome difficulties and achieve their learning goals in English. The questions remained to same for all three interviews.

Discussion

The success of the study was not achieved without considerable difficulty, mainly in the areas anticipated. However, a major concern was the students' lack of capacity to make decisions in the classroom. This proved to be more problematic for a greater number of students that was anticipated. It was apparent for many students in the initial stages and continued to be problematic for others for an extended period. The degree of difficulty that students demonstrated in this role was largely unanticipated. The responsibility of decision-making in the formal education environment was unfamiliar to the majority of students and the resultant insecurity was further complicated by the need for personal, individual responses.

The situations in which there were no clear right or wrong answers were clearly unsettling for many students. It was observed that most would have been more comfortable if the teacher had taken responsibility for deciding on their behalf. Even in the situations were some options were provided for the students to consider, such as the lists of goal suggestions and reflection starters, most students found the decision challenging. The findings of this study may be of considerable educational interest and value as they provide evidence that differentiated programs of work that support student diversity and promote learners' intrapersonal intelligence can lead to improved academic outcomes, but, on reflection, it is the insights into the roles that are traditionally expected of students, coupled with the duration of the study that may merit further attention. Studies that are not of sufficient duration to allow students to assimilate the demands of a differentiated learning environment, in which their own choices are critical, may produce data which is contradictory and difficult to interpret correctly.

The real significance of the study may lie in the processes in which students found themselves engaged as part of the differentiated program of learning and the responsibilities they had to undertake as a result of this participation. This may be especially true of processes relating to decision making, taking initiative and sharing the responsibility for their own learning, as was evidenced in classroom activities similar to the one described using the cubes with the Revised Bloom's (Anderson & Krathwohl, 2000) sentence starters. It could be argued that this particular group of students may have found these strategies and processes so difficult as a result of their disenfranchment and lack of success in educational contexts. That may easily provide part of the

answer but it does not significantly diminish the problem, which is that many of the educational practices and pedagogies currently implemented in educational institutions are contrary to the wider aims of educational endeavor.

The result is that students are not adequately prepared to play their part in pedagogies that require students and teachers to develop partnerships in the teaching and leaning process. What may be missing from the body of work relating to education in the future is the acknowledgement that choice, differentiation of content and process and a degree of accurate self knowledge will not be enough to transform educational endeavor. What may be required are strategies to diminish the traditional role of the student and engage in pedagogical approaches that re conceptualize what it means to be a student who is a partner in his/her own learning, making decisions and taking initiative that impact on his/her own academic success.

Conclusion

Effective education for the twenty first century calls for new perspectives on the *potential* of intelligence, the celebration of the differences that characterize students as individual learners and the acknowledgement of the commonalities that bring them together as members of teaching and learning communities and awareness of the importance of specific scientific endeavors. However, it may be that this is not enough to effect the 'paradigm shift' to which Henderson refers (2002 p.12). This may be insufficient 'to support the educational needs of students today' (Dickinson, 2002 p.10; Marshall, 1999). Certainly they may fall short of 'stretching the minds of learners' (Gardner, 2006 p.153) in any substantial manner. It may be that the difficulties experienced by a small sample of students (Sellars, 2003, 2006) have served to highlight some important components often absent from teaching and learning contexts: the capacity of students to play a significant role in their own education. If education endeavor is to be characterized by the degree to which it challenges students to improve thinking skills and 'stretch' their minds, it would appear prudent to redefine the role of the learner in this process.

Students would need to learn how to determine and justify some key aspects of their own learning. They would need to be able to engage with the tasks that promote knowledge acquisition and competencies in a manner that would be personally meaningful. They would need to be able about to articulate which strategies and learning tasks are most likely to facilitate successes and they would learn to do this by engaging in reflective activities focusing on their own experiences of learning. It would appear sensible to conclude that students who have the capacity to develop, monitor and achieve their own learning goals by identifying the strategies that are successful for each as individuals are better placed to engage in tasks that 'stretch' and challenge their thinking. The first step in the transformation process that is called for in education may as simple as allowing students to make real choices in educational contexts, to support them accurately appraise their classroom decisions and to enlist them as partners in their education.

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