Education and steiner waldorfs science curriculum education essay

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CHAPTER 4

4. 0 Introduction

This chapter focuses on the Steiner Waldorf education, specifically on it science curriculum. Therefore, to discuss on the Steiner Waldorf science curriculum, this chapter will covers four important elements of curriculum which are objectives, content, implementation and assessment. However, to help one to understand and gain insight towards this curriculum, I would first highlight the brief history of this curriculum and its development worldwide. In each subheading, I will discuss the main features or characteristics of this curriculum which were obtained from document analyses and through the interviews and observations that I carried out.

4. 1 Brief History of Steiner Waldorf Education

Steiner Waldorf education began in 1919, when Rudolf Steiner, a maverick Austrian philosopher and scientist who was particularly known for his work on Goethe's scientific writings, visited the cigarette factory in Stuttgart, Germany which known as Waldorf-Astoria , to give a speech to its workers. Barely five months into the end of the First World War, Steiner took the opportunity to stress on the need to create a better world with a better society. The idea was to create a new social order with a new sense of ethics more diplomatic and peaceful way of resolving conflict among the nations. Having delivered his speech, Emil Molt, the factory owner, thought of an idea to provide free schooling to the workers' children, and asked Steiner if he would consider the idea and to start it out. On some conditions, Steiner agreed and mentioned the need for his school to be run by the teachers.

Curriculum that too ambitious is not the one preferred by Steiner. Hence, rooted in a philosophy called Anthroposophy, Steiner designed a curriculum that would encourage free thinking within children rather than focusing to fulfill the societal and government's needs. The content of the Waldorf curriculum was, in and of itself, responsive to the developmental phases of childhood, as well as nurturing of children's imaginations. More than merely ' developmental education', Steiner education is a deeply insightful application of learning that is based on the study of humanity. The curriculum is actually based on his word " The need for imagination, a sense of truth and a feeling of responsibility, these are the three forces which are the very nerve of education" (Oppenheimer, 1999)

Steiner believed that the whole person – mind, body and spirit must be given strong emphasis and integrated into the educational process as well as into life. On that reason, one can see that learning at Steiner school is interdisciplinary, as well as integrating practical, artistic and conceptual elements. Now, Steiner Waldorf education is currently the second largest independent school system in the world, where in 2009 there were 994 independent Waldorf schools located in sixty countries throughout the world. With its unique goal of schooling which is to produce individuals who are able, in and of themselves, to impart meaning of their lives, Steiner education is spreading and is being accepted in the entire world. (Waldorf Family Network, 2003)

(Sources: www. waldorffamilynetwork. com & www. waldorfcurriculum. com)

4. 2 Objective

The way teaching is carried out in Steiner schools is based on the following rationale:

“ A man who knows what to think and observe, has initiative and urge for knowledge, impulses which grow out of his will or moral nature and finally, it is considered advantageous if he has imagination and the ability of grasping intuitively the solution of a problem” (Heitler, 1992; p. 25)

Since learning is interdisciplinary and across the curriculum in Steiner Waldorf education, there is no objectives or aims that appear different among the subjects offered. The aim is basically to produce rounded, resourceful and free thinking citizens who are versatile in manual skills. In other words, the education offer is basically to produce holistic students who

are balanced physically, mentally, emotionally and spiritually. This was clearly highlighted in the journal by Edgar Allen Beem (n. d) who wrote about his own experience conducting research in a Steiner school. This education is aims to educate the head, the heart, and the hands, where its aims are more than just encourage students to think, it also help students to feel, experience and sense their learning. This makes learning become meaningful and stay in students' life for many years, contributing positive and healthy personal growth, as indicated by a teacher in one of Steiner's school:.

" Waldorf education is far more social education than public school, public schools educate mostly the head. Waldorf schools educate the head, the heart and the hands. There' much more to children than just thinking." (Beem, n. d)

Steiner Waldorf education is said to be an education with soul; it aims are more than just to offer students with greater academic performance, more individual attention, and a competitive advantage. The anthroposophical philosophy underlying the designed curriculum suggests that it is responsible for the developmental phases in childhood and nurture children's imagination. Steiner was in view that schooling is supposed to encourage creativity and free-thinking among children instead of catering to the demands of the government or economic force and the implementation of those skills mentioned by Ogletree (1998). Hence, in any subjects offered in Steiner Waldorf's education including science, the term of producing ' whole human' is always highlighted instead of ' intellectual human'.

Steiner education views science as a subject which no longer has its soul due to the reason of it has been separated from its philosophy. Steiner believed that his approach fulfils, the demands of education producing the ‘ whole’ human being, those who are equipped with knowledge and skills to solve problems and are ready to confront the world (Heitler, 1992). To develop students with soul or spirit, the Steiner approach specifically stressed on fruitful experience and meaningful learning which focused manipulation of senses are heavily. According to Graham Kennish, a Steiner Waldorf science educator, the Goethean approaches that Steiner teacher in science use enables;

“… the emphasis to be on observation, wonder and holistic thinking, preventing science becoming a subject separately from art, religion or music.” (personal communication)

This seems to suggest that the approaches and the objective in science curriculum in Steiner Waldorf education are mutual and on the same time the integration of other elements in science such as art, religion and music caused science in Steiner Waldorf education to be richer and wider in perspectives as compared to other curriculums.

Steiner education focuses on students’ developmental process. In science teaching, the main objective is basically to ask the students to observe and to think instead of accepting the theory taught to them. Based on their observations, students will hypothesize and soon develop their own ideas.

Content

As an independent institution, there is a common curriculum that has been agreed upon by the members of Steiner Waldorf education. However, each Steiner school has autonomy to choose on their curriculum whereby each school is not required to strictly follow the prescribed curriculum, as suggested by a SW science teacher interviewed by the researcher:

“ There is curriculum, but not one to be followed rigidly or finished completely. The focus is on the process not the content. Better one topic with a deep process than many which just impart information”

Steiner teachers often are given the autonomy with respect to how and to what extent they would want to cover the curriculum. The principle mutually held onto by Steiner educators is that it is better to teach students one topic in-depth rather than many topics which only cover partial information.

To support the objectives of Steiner education, the provided or designed curriculum is wide and balance. The scope for science, for example, covers subjects like life sciences, biology, chemistry and physics. Steiner education always considers the right or suitable time to introduce subjects to the students in accordance to their maturity and mental development. Science subjects are basically introduced at an early age to allow students to be familiar with their surroundings. The students were encouraged to develop their senses; the emphases are on imagination, dreams and senses before subsequent development of scientific thinking. The choice of topic in each stage is much dependent on the students’ age. It is believed that, the earlier

the exposure to scientific idea to a child, the more harm it will cause to the child as highlighted by the respective Steiner educators below:

“…. science ‘ proper’ could be said to begin in class 6 (age 11/12). The Waldorf science program continues from this point without break for the last seven years of the Waldorf pupil’s school career….. Children of this age are less dreamy, less pre-occupied with imaginative forms of thinking and more directed towards earthly affairs. They pay more attention to precise forms of thought.” (Masters, 1992, p. 6)

“ I’m convinced that an attempt to be too scientific at too early an age can do more harm than good” (Gebert, 1992, p. 35)

The integration between one science subject to another is of particular consideration in Steiner education. Basically at an early age, students are introduced to Life Science whereby this subject is actually the combination of other science subjects such as biology, chemistry and physics together with other branches of science knowledge such as astronomy and geology. Once the students reach the age of puberty, approximately between the ages of 12 to 14, specific science subjects like chemistry, biology and physics will be thereafter introduced as separate subjects;

“ The pattern of science teaching in the Waldorf curriculum is remarkably symmetrical and the concept that it contains is clear……. At the lower end of school we find the introductory sequence: man, animal, plant, mineral. At the upper end we have the sequence mineralogy, botany, zoology……a teacher must always have in mind the development of faculties as much as the acquisition of knowledge” (Lanning, 1992, p. 42)

As an example of the content of Life Sciences which taught in Steiner schools, when the students are in class 1, 2 and 3, students were introduced to the themes which relevant to the life sciences. Stories are main medium to deliver the content especially on the scientific phenomena. For instance, children learn how metamorphosis happened throughout the story that they listen or the transition of a tadpole to become a frog throughout the stories delivered. However in Class 4, the continuation of the subject is carried out by establish children to the experience which more distance to the people and the world around them. Observations and descriptions of the living world which combine accurate detail with a sense of the character of the plant or animal and the environment in which they live are employed throughput the lessons. This is indirectly will form a bridge for the students to classes 6, 7 and 8 as these classes will offer them concepts which more complex.

Implementation

As previously discussed, there is a curriculum that serves as guideline for teachers in Steiner schools and schools are given the autonomy to decide on the extent of coverage and flow of lesson; resulting in variation within curriculum. Nevertheless, despite the varying content covered, there seemed to be a degree of consistency across schools, largely due to the teachers' obedience in following the principles and philosophy of Steiner education. One measure to ensure that the implemented curriculum is in line with Steiner education objectives is through the extra emphasis on student creativity. The teachers are required to design tasks that help incite students' creativity. For example, during my observation in one science class, the teacher asked students to come out with a metal story. To have a

better idea about the assignment given to the students, I asked the teacher the purpose of asking his students to come out with that kind of assignment. He explained that, the purpose is basically not to measure how much students understand, however it is basically to stimulate students' creative thinking. In completing the assignment, students were asked to come out with creative essay which need them to use their imagination and develop a story based on their imagination and ingenuity.

Even if it was not scientific, the teacher whom I observed believes that somehow the idea will develop in students' mind. He further added that things which are unfamiliar to the students will commonly or somehow disappear. However, by getting them to generate a story of unfamiliar ideas, phenomenon or concepts, the students' memory has helped them retain the information. Another distinct characteristic that can be observed in Steiner education is ' absenteeism' of textbook. In reality, no textbooks were used and Steiner teachers themselves avoided from using textbooks, especially among lower grades students. However, textbooks are used by the students in upper grades as supplement to their main lessons. The most interesting part in Steiner education is that the students actually produce their own textbooks (Oppenheimer, 1999). In his article entitled School of Imagination, Oppenheimer observed Steiner students and noted that he saw students filling their own notes and recording their field trips, classroom experiments, impressions of the teachers' regular oral presentations. In more advanced classes, the students literally wrote down the synthesis of what they have read from primary sources.

Not only that, during my visit to one Steiner school, I had the opportunity to look at the students' handbook. The handbook is similar to a folio that needs to be completed by students at the end of each topic. To make it more interesting, students are given the freedom to use their own creativity and understanding to come out with their own handbook. The handbook completed by students will be submitted and marked the teacher. Another important feature of Steiner education is the pedagogy used by the teachers. For the teachers, the pedagogy should always in line with the curriculum since it is a part of the curriculum. Hence, the use of rhythm, body coordination, spatial awareness and cooperation are being emphasized by teachers throughout their lessons. This is known as the multi-tasking pedagogy promotes the physical, social, emotional, intellectual and spiritual growth of the students. Through the promotion of the physical, social, emotional and spiritual, the curriculum is believed to be parallel with the objective of the curriculum.

As being mentioned before, Steiner education educates the head, heart and hand of the students. Therefore, it is not surprising to see that strong emphasis is being given to practical skills. From the interviews conducted, the teacher stressed on the importance of conducting experiment when learning science in Steiner education. Oppenheimer (1999) in his article also stated how science class in Steiner school is conducted whereby the teacher will begin the science lesson differently from the way science teachers in average school conducted theirs. Steiner science teacher would begin with an experiment before putting the concept into a discussion. Next, the students will literally sleep on the experiment carried out, only to be followed

by discussion of concepts a few days later. When the topic was put into discussion, the students will come with lots of ideas and will be asking teachers many questions. Earlier, when they were carrying out the experiments, the students had relatively fewer questions asked. Observation and reasoning skills are also stressed upon during the experiments. In doing so, the teachers are actually encouraging the students to think and to critically analyze the learning situation, as highlighted by the following Steiner science teacher whom I interviewed:

“ The process that we (teachers) want students to be able to master are; being observant, Be questioning of the observation, and have enough confidence in their own reasoning ability to produce plausible explanations of the observations…. In short, firstly we observe, and record our observations (then we sleep), then we try and make sense of what we have seen.’

Gebert (1992) also wrote:

“ The children must of course, learn about the methods employed by scientists, and they should also carry out experiments themselves. They should have experienced what it feels like to be faced with a scientific problem and what it means to make accurate experiment….. It would then be possible to deal with these much more thoroughly and the children would gain a much deeper experience from them” (p. 33)

It is evident from the above that Steiner education strongly believe the hands-on, practical experience, to a large extent, does not only help initiate but also sustain the thinking process among students.

Time is always the major limitation factor when teaching in regular classrooms, but not a threat for Steiner teachers. For them ample time should be given to the students to allow them to think and reflect on learning. Giving the students answers will be the last option for Steiner teachers since they believe giving away answers will only impede the students from thinking. Based on an interview with a Steiner teacher, ‘ incorrect’ answer is always allowable and the teacher will suggest correct model of answer rather than labeling students with ‘ incorrect’ answers. Suggesting the ‘ correct’ answers to students will be carried out indirectly since the purpose is to get the students to think. At one point, when the model of ‘ incorrect’ response suggested by the students is no longer applicable, they will realize the need to come out with another answer.

“ If a child suggests an “ incorrect” model to explain an observation it has made, it is important that the teacher allows the child to play with the model and does not label it as wrong. Ideally, the teacher should then present new observations that cannot be explained by the child’s “ incorrect” model, so that the child voluntarily discards their model in favor of a new one that can explain all of the observations made.” (personal communication)

In other words, the role of teacher is to facilitate the students and help them to look at the options from which they can rebuild their model of answer. This actually proofs that Steiner education is very much students-centered in carrying out lessons.

“ Waldorf education is not child-initiated; it is child centered…..” Beem (n. d)

Another aspect in carrying out lesson is that the Steiner teacher will sometime make use of props and natural resources to help them in teaching. In addition to utilizing natural resources, Steiner teachers also emphasize the value attached to the props or the natural resources such as handwork and aesthetic value represented by those items. By inculcating values, students will indirectly develop their own aesthetic sensibilities which, in turn, help them to appreciate their surrounding such as nature. The next interesting feature of Steiner education is the emphasis on listening skill at an early age. This emphasis explains why Steiner curriculum is preferably delivered orally. However, instead of using the traditional means of lecturing, Steiner teachers prefer knowledge be delivered in the form of story-telling (Beem, n. d).

“ Waldorf children learn to listen really well. Much of the curriculum is delivered orally by the teacher. It’s not lecture. It’s done in story. In public school, rarely does a teacher tell a story; they read the story” Van Fleet

In addition, Steiner teachers are also not encouraged to refer to textbooks when teaching. This is because too much reference to textbook will disturb the flow of the lesson, making the teacher look ‘ incompetent’ and will limit discussion to aspects only covered in books. Nonetheless, when giving students exercise or when making them to look for extra or further information, the teachers would use books as reference.

Since story-telling is one of main ways how teachers teach in Steiner schools, it can be considered that Steiner education employs narrative pedagogy.

Golden’s (1997) who conducetd a study on narrative as part of Steiner curriculum, found that it is useful as Steiner teacher use story as;

part of curriculum;

a teaching strategy to teach content; and

a way to teach values.

Even though technology is a part of science, surprisingly in Steiner education, technology is believed to bring more harm to the students if it is being exposed to students at an early age. Basically teachers will discourage students to use computer and watch television since excess to these will kill students’ imagination and creativity. Another interesting aspect of Steiner education that I would like to highlight is the fact that the needs of the national examination course and the requirements of Steiner curriculum do not complement each other. This can clearly be seen from the attention drawn to different approaches in science; to prepare students for examination, the approach to teaching are on models and hypotheses while Steiner education stresses on the development of observation faculties.

4. 5 Assessment

Assessment is an important part of curriculum as it can determine successful implementation of a curriculum. Due to that, Steiner education has always taken aspects of assessment as prime consideration. In Steiner education, assessment is defined as “ clear seeing, rich understanding, and respectful application” (Mepham & Rawson, 2000). It is an ongoing yet implicit process that takes place throughout years of study. Assessment is believed to serve

two important functions: supporting learning and establishing standards. The main roles of assessment are basically to support future learning and to assess healthy development of the students. Indirectly, assessment also could give teacher the basic ideas in determining whether the students' needs are being met throughout the implementation of the curriculum while simultaneously allowing the teacher to measure students' progress in accordance to Steiner's benchmarks.

The Steiner Waldorf approach sees assessment as a means of gaining knowledge of, insight into and understanding for the child. Based on the analysis of documents, I discovered that summative assessment is not preferred in Steiner education. Ideally, assessment in Steiner education has no formative function and the normative assessment that ranks students is perceived as counter-productive. This is because learning in Steiner school is a noncompetitive activity; assessment in Steiner school is very much individually based, focusing on how well each student progresses unlike in regular public schools where assessment of students are done through the use of a test to assess students' learning. Nonetheless, formative assessment plays a central role in Steiner Waldorf approach. It is an expression of data core ethos of the class teacher, who provides long-term continuity for the child's development.

The method of grading in Steiner class is unique where it is more of an evaluation as to how well the students are growing and meeting new things that are being presented to them. For Steiner, testing where students have to ' hold all the information in their head' is considered hard, may be likened to death process and kills the excitement of teaching. Due to these reasons,

Steiner students will only sit for a test when they are old enough and able to handle ‘ hard’ situation which basically when they are in the eighth grade. Although Steiner education does not prefer summative assessment, it does not mean that the students do not have sit for the National test. Steiner teachers still need to prepare their students for National examinations like the “ O-Levels” and “ A-levels” since those examinations are the pre-requisites for entry into tertiary institutions of learning. On preparing for examination purposes, Steiner teachers believe that the National examination is taking away time from the teaching Steiner curriculum. This is seen as unhelpful for students’ development and progress in learning process.

This is further supported by an interview conducted on a Steiner teacher, where she mentioned that “ to get our students to do well in public examination, we have to stop them from thinking too far, get them to go fast and for the sake of the examination they do not have to see things as whole”. Based on the interviews conducted, it can be deduced that the common assessments carried out by Steiner teachers are informal in nature. The most common informal assessment carried out is the on-going observation. On-going observation usually takes place during lessons or when the students are completing a given task. Through observation, the teacher will actually taking note of the students’ progress and performance in class.

Accurate and comprehensive observations will give richer understanding to the stakeholder such as parents especially on students’ progress. Increased understanding can lead to positive development in the child. Notes taken

during observation will be kept as record in students' personal file so that they can be referred to by other teachers and parents to help the students to improve. The observations made by the teacher are less likely given grades. However, the detailed, written feedbacks will help students, parents and teachers to identify areas that need improvement; to set appropriate tasks for teacher and students; and to characterize the students' approach, attitude, behavior and abilities within the context of their overall development. As I mentioned in the implementation part, Steiner students will submit their work to be marked by their teachers. From the assignment, the teacher will also take a look on how students completed the work and assess their understanding. For example, when teachers read the students' main lesson book or their handbook, they will write formative feedbacks for further improvement and will keep record on the students' work.

According to Mepham and Rawson (2000), assessment of learning through the main-lesson was described as continuous. Through the informal and on-going assessments which cover tasks like classroom presentations, projects, essays, tests and artistic or practical tasks, teachers draw up detailed profile which reflect students' learning and behavior in the practical, emotional and cognitive realms. From the notes, the teachers will slowly develop understanding of each student's skills, capacities and faculties. In main lesson program and subject lessons, there are three phases of learning employed in Steiner Waldorf education which known as stage one, two and three. Stage one generally takes place over one day – the first day. Stage two usually occurs on the next day – the second day. However, the third stage may take place over the following days, weeks or, in some cases,

years. This is because, the aims for the lesson in the third stage are to look at the development and progress of the concepts that being introduced in the previous class as it ideally supposes to flourish in students' mind and not to take as permanent and fixed.

Basically stages two and three are the stages that require teachers to assess the students' understanding. This because, at the second stage after the students has ' slept on' the previous day's content, they will be called upon to remember what was previously presented. In a process of discussion, recall and ' weighing up', the students are then invited to express creatively individualized and differentiated learning outcomes. The content is now ' owned' by the students and has been transformed. At this stage, a process of judgment-forming has taken place. At the third stage, it is crucial to help students to move towards the development of analytical, causative thinking capacities. This is the stage where students can actually see clearly what they learned previously; at this stage the students will further develop their understanding towards the conceptual realm. Students are led towards the identification of concept or scientific law through guided synthesis of different experiences, judgments and perspectives. This is the phase where students are said to undergo metamorphosis or transformation through a process of experiencing, forgetting, creative remembering and individual expression. (Burnett. et al, 2000; p. 21)

In Steiner education, good practice occurs when the teacher reflects and assesses his or her own teaching, the learning outcome of individual student as well as shares those reflections with colleagues on regular basis. These insights should feed directly back into the classroom and can help to

promote developmental opportunities of both students and teachers since assessment can lead to transformation in teaching and learning.

4. 6 Conclusion

In discussing the four major aspects of curriculum in Steiner education and Steiner science curriculum, I can conclude that the curriculum is interdisciplinary and cuts across various subjects. The methods or pedagogy that Steiner teachers use are basically applicable for any subjects taught in the school. Steiner education, in short, has its own character that defines it existence and establishment in the entire world such as its unique pedagogical approaches and the emphasis that given by this education.