Constructivism Theory Based Learning: A Total Quality Approach

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Development Project Report
February 2008

JYVÄSKYLÄ UNIVERSITY OF APPLIED SCIENCES
Teacher Education College

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Type of Publication
Development project report

Pages
44

Language
English

Confidential
☐ Until_____

Title
Constructivism Theory Based Learning: A Total Quality Approach

Degree Programme
Teacher Education College

Tutor(s)
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Assigned by

Abstract

Constructivism theory is starting to gain substantial momentum in education process as a base for improving the learning environments and enhancing the learning outcomes. As the focus in constructivism theory based learning is shifted toward the learners, and the learners are expected to play an active role in the learning process, the issue of quality and consistency began to surface due to the absence of a clear quality process that can effectively check and control the learning outcomes. This as a result contributes negatively to the academic environment and learning processes.

The Total Quality Management (TQM) model and management techniques have been long adopted and widely used by the business and commercial community. As TQM principles are adopted by facilitators and educators, it was discovered that there is a natural fit for quality principles and practices with their own aspirations for the continuous improvement of education.

This developmental project aims to present a model which could be used to support any constructivism theory based learning sessions with an objective to improve the quality of learning outcome. The main goal of this paper is to establish a total quality model for a constructivism theory based learning session. The main aims of the model are to ensure both quality in process and content of the session. The model covers ‘end to end’ of a learning process that is built primarily based on Constructivism theory.

Keywords
Constructivism Theory, Total Quality, Learning, Diverse Learners, Learning Modelling

Miscellaneous

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1. Introduction

Constructivism theory is starting to gain substantial momentum in education process as a base for improving the learning environments and enhancing the learning outcomes. It theorizes that learners actively construct their own understanding of the world around them by fitting their perceptions of the world into their existing knowledge and understanding.

Constructivism theorists generally advocate that learners must construct their own knowledge. Each learner has conceptions and skills with which he or she must construct knowledge to solve problems presented by the environment. The role of the community -- other learners and the facilitator or educator -- is to provide the setting, pose the challenges, and offer the support that will encourage construction.

As the focus in constructivism theory based learning is shifted toward the learners, and the learners are expected to play an active role in the learning process, the issue of quality and consistency began to surface due to the absence of a clear quality process that can effectively check and control the learning outcomes. This as a result contributes negatively to the academic environment and learning processes.

The Total Quality Management (TQM) model is widely used by the business and commercial community. The model focuses on Customers, Culture, and Capacity for continuous improvement -- which are the signature features that have brought great success to many businesses to rejuvenate themselves, to improve processing efficiency, to enhance consistency and quality of output resulting in higher returns over the long run.

As TQM principles are adopted by facilitators and educators, it was discovered that there is a natural fit for quality principles and practices with their own aspirations for the continuous improvement of education.

In this paper, we will develop a model based on the TQM principles and management techniques with an objective to help facilitators and educators to develop, deliver and derive more qualitative

curriculums and sessions that are constructed based on Constructivism theory by bringing them an enhanced control over the learning outcomes and consistent results for the learners.

With above background, we will first provide an overview of the Constructivism theory and the Total Quality Management (TQM) principles. Thereafter, we will present our model, walk through briefly the various stages of its applications which we believe when implemented successfully will improve the quality of teaching sessions and contents built based on Constructivism theory, hence the resulted learning outcomes.

Finally, we will provide our conclusion and recommendations for the subject matter.

2. Models of Learning

This chapter will present different learning models, Constructivism, Student Empowerment Model of Learning and Concepts of 'Andragogy'.

2.1. Constructivism

Constructivism theorizes that learners actively construct their own understanding of the world around them by fitting their perceptions of the world into their existing knowledge and understanding. Constructivism theorists generally advocate that learners must construct their own knowledge. Each learner has conceptions and skills with which he or she must construct knowledge to solve problems presented by the environment. The role of the community -- other learners and the teacher -- is to provide the setting, pose the challenges, and offer the support that will encourage construction.

Anderson, et al (1994) elaborate this perspective on learning and teaching.

- Learning is dependent upon the unique prior conceptions that the learner brings to the experience. Old knowledge is the foundation into which the new knowledge must be integrated.

- The learner must construct his or her own meaning. Students must organize and reorganize knowledge themselves until it fits with prior conceptions and has meaning within the learner's overall system. Learning is not memorizing or taking in knowledge in a form designed by someone else.

- Learning is contextual and should be based on concrete experiences. The meaning that new knowledge has is highly dependent upon its context; it should not be presented in the abstract, independent of any meaningful context.

- Learning is dependent upon the shared understandings that learners negotiate with others. Learners and teachers bring individually held knowledge, beliefs, and feelings to the

classroom and through daily interactions, they negotiate shared understandings of knowledge. These inter-subjective meanings, increase the importance of discussion and cooperative learning.

- Constructivist teaching involves understanding students' existing cognitive structures and providing appropriate learning activities to assist them. Teachers need to attend to students' existing cognitive structures and provide learning activities accordingly.

- Rote learning is often used because it is easier than dealing with the learners' preconceptions and misconceptions. It is easier to memorize facts because it does not build on prior learning, and therefore, is not influenced by misconceptions. Students when exposed to rote learning for several years come not only to accept it but to actually prefer it. Learners must be made aware that meaning is something they construct, not something given to them by the teacher.

- Teaching can utilize one or more of several key strategies to facilitate conceptual change depending upon the congruence of the concepts with student understanding and conceptualization. Models include some variation of awareness, disequilibrium, and reformation. Awareness is based on the student working with information sources which link prior knowledge and construct meaning. In disequilibrium, learners evaluate the new constructs for consistency (agreement) or dissonance (disagreement) with prior knowledge. To reformulate their thinking, during the reformation phrase, students may be presented with formal concepts that lead to the resolution of anomalies and to the dissipation of cognitive dissonance.

- The key elements of conceptual change can be addressed by specific teaching methods which address awareness, disequilibrium, and reformation. Constructivism leads to new conceptions of what constitutes excellence in teaching and learning and in the roles of both teachers and students. The classroom is no longer teacher-centered but is student centered. The teacher serves as a facilitator, pathfinder, guide, clarifier, and maintains the environment. Students shift from that of a passive receptacle to that of an active participant,

exploring, investigating, discussing, and constructing his/her own knowledge. These role changes are among the most difficult to attain.

- In constructivist teaching and learning, more emphasis is placed on learning how to learn than on an accumulation of facts, creating a philosophy of content in which "less is more."

2.2. Student Empowerment Model of Learning

Cummins (1989), in a synthesis of research and theory on successfully learning by language, cultural and ethnic minority students, provides the model of student empowerment. At its core are four components, each with a major shift from the traditional educational paradigm to an empowered paradigm. The four core components are:

- **Cultural-Linguistic Incorporation:** moving from additive rather than subtractive; where students' languages and cultures are incorporated into the teaching curriculum rather than being seen as hindrances to their learning

- **Pedagogy:** interactive/experiential pedagogy, rather than one of transmission of information; promotes intrinsic motivation on the part of student to use language in order to formulate meaningful questions and generate knowledge

- **Community Relations:** inclusive rather than exclusive; full community participation encouraged as an integral component of children's education

- **Assessment:** advocacy oriented rather than legitimization oriented; professionals involved in assessment become advocates for students by focusing primarily on the ways in which students' academic difficulty is a function of the interactions within the school context rather than legitimizing the location of the "problem' within students

2.3. Concepts of ‘Andragogy’

Malcolm Knowles identified a model for adult education (1975) which he called andragogy and defined as "the art and science of helping adults learn." According to Knowles (1983) the media have not been used effectively for adult education because they have been seen as one-way transmissions of teacher-controlled instruction which does not result in optimal learning; they are based upon the pedagogical model of education and the entertainment model of media use.

Knowles recommends the andragogical model of learning and the educational model of media. Knowles makes the distinction among the andragogical and pedagogical models of teaching based upon sets of assumptions about learners which teachers make. The teacher who makes one set of assumptions will teach pedagogically whether he or she is teaching children or adults, whereas the teacher who makes the other set of assumptions will teach andragogically whether the learners are children or adults (Knowles, 1975). The key features of the model are interaction, task-centeredness, individualization, and self-directedness. Knowles states that learning is most effective when learners engage interactively in the inquiry process. Interaction can be introduced between the learner and the program using interactive video disc, computers, and interactive reading materials. This is in line with the principles stipulated by the constructivism theory.

Concept of adult learner: Learner in this context is self-directing. The psychological definition of adult is "one who has arrived at a self-concept of being responsible for one's own life, of being self-directing." Adults who have arrived at that point develop a deep psychological need to be perceived by others, and treated by others, as capable of taking responsibility for themselves. In situations where others impose their wills on the adult without allowing the adult to participate in making decision which affect the adult, he/she will often experience a feeling of resentment and resistance. Adults entering a situation labeled "education" or "training" hark back to their conditioning in school, assume role of dependency, and demand to be taught. However, if they really are treated like children, this conditioned expectation conflicts with their much deeper psychological need to be self-directing, and their energy is diverted away from learning to dealing with this internal conflict.

- **The role of the learner's experience:** Adult enter into an educational activity with both a greater volume and a different quality of experience from youth. For many kinds of learning, adults are the richest resources for one another, and hence the greater emphasis on group discussion, simulation exercises, laboratory experiences, field experiences, and problem-solving projects that make use of the experiences of the learners. Because of the vast difference in learners' experiences, emphasis is placed on individualized learning plans through self-directed learning contracts. Adults derive their self-identity from their experience; if this is ignored, not valued, or not made use of, it is not just the experience that is being rejected - it is the person.

- **Readiness to learn:** Adults become ready to learn when they experience a need to know or do something in order to perform more effectively in some aspect of their lives. Main drivers and sources of readiness are the developmental tasks associated with moving from one stage of development to another; changes such as childbirth, loss of job, divorce, death of a friend or relative, change of residence - is likely to trigger a readiness to learn too. To induce a readiness to learn, learners can be exposed to more effective role models, engaged in career planning or provided with diagnostic experiences in which they can assess the gaps between where they are now and where they want and need to be.

- **Orientation to learning:** Because adults are motivated to learn after they experience a need in their life situation, they enter an educational activity with a life-centered, task-centered, or problem-centered orientation to learning. For the most part, adults do not learn for the sake of learning; they learn in order to be able to perform a task, solve a problem, or live in a more satisfying way. The main implication is the importance of organizing learning experience (curriculum) around life situations rather than according to subject matter units. Another implication is the importance of making clear at the outset of a learning experience what its relevance is to the learner's life tasks or problems. One of the first tasks of a facilitator of learning is to develop "the need to know" what will be learned.

- **Motivation to learn:** The most potent motivators are internal -- self-esteem, recognition, better quality of life, greater self-confidence, self-actualization, and the like. These intrinsic

motivators are superior to external motivators such as a better job, a salary increase, and the like.

• The basic format of the andragogical model is a process design which assigns a dual role to the facilitator of learning; first and primarily, the role of designer and manager of processes or procedures that will facilitate the acquisition of content by the learners; and only secondarily, the role of content resource. Besides the facilitator, other resources include peers, experts, media, experiential learning, and field experiences. It is the facilitators job to link the resources and the learners.

• Climate setting creates a climate that is informal and conducive to learning. The physical environment may be one large circle or several small circles of chairs. The psychological climate includes mutual respect, collaborativeness, mutual trust, supportiveness, openness and authenticity, pleasure, and humanness.

• Involve learners in mutual planning as people tend to feel committed to any decision in proportion to the extent to which they have participated in making it.

• Involve participants in diagnosing their own needs for learning. This involves meshing the needs of which the learners are aware (felt needs) with the needs their organizations or society has for them (ascribed needs). Using a model of competencies allows learners to identify the gaps between where they are now and where they need to be.

• Involve learners in formulating their learning objectives. Learning contracts provide structure for this. Goals are set by mutual negotiation.

• Involve learners in designing learning plans which help learners identify resources and devise strategies for using the resources to accomplish their objectives.

• Help learners carry out their learning plan. Knowles sees the model as being a process design rather than a content plan so that there is no attempt to cover particular content areas; instead the

student samples content in relevant problem situations. It is useless to have a stockpile of content information without having a process or method by which to handle it.

• Involve learners in evaluating their learning by judging the quality and worth of the total program and their learning outcomes. The evaluation of the learning which has occurred is done through mutual assessment of the evidence which is prepared by the learner For media programs to be effective with adult learners, Knowles states that they must be organized around the acquisition of the knowledge, skills, understandings, attitudes, and values that are applicable to performing the life tasks with which adults are concerned. Knowles (1975) states that one of the most significant findings from research about adult learning is that when adults go about learning something naturally, rather than being taught, they are highly self-directing. He finds that evidence is accumulating to support that what adults learn on their own initiative - through planning and constructing their own learning - they learn more deeply and permanently than what they learn by being taught.

3. Total Quality Model

Quality is never an accident. It is always the result of intelligent effort. It is the will to produce a superior thing. - - **John Ruskin**

It requires a quality experience to create an independent learner. - - **Myron Tribus**

3.1. Total Quality Management Principles

As Total Quality Management (TQM) is adopted by facilitators and educators, it was discovered that there is a natural fit for quality principles and practices with their own aspirations for the continuous improvement of education (Bonstingl, 1992). Bonstingl has taken W. Edward Deming's (widely regarded as the "father" of the TQM movement) 14 points, Juran's Trilogy, Kaoru Ishikawa's Thought Revolution and has adapted the theories to education.

The "Three Cs" stipulated in the TQM model hence focused on Customers, Culture, and Capacity for continuous improvement -- which are the signature features of total quality environments of which many successful businesses have used to rejuvenate themselves. These are summarized as follows:

The Customer -- total quality really has two kinds of customers in mind--the external customers , who "consume" the product or service offered, and the internal customer, i.e., those who, in the process of creating a product or service, receive the output of another's work, with each successive person adding something of value....if everyone does his or her job in a way that eliminates problems for the next person up the line, the final customer...will be satisfied....

The Culture -- A successful change strategy involving quality management also involves a commitment to create a specific kind of organizational culture, based on trust and shared decision making....

The Capacity -- Leaders in quality-oriented organizations always seek ways not merely to change but to manage and instill the change process itself: in Deming's terms, they achieve "constancy of purpose"....

Most importantly, TQM is about ‘Systematic Change’, i.e. the "lead actor" in TQM is...the process of systemic change itself... The point is to develop the organization as an integrated, organic set of relationships, and to gain the ability to change and direct those relationships again and again in the direction of improvement -- as defined by the organization's internal and external customers.

Bonstingl observes that teacher-students teams are the equivalent of industry's front-line workers. "*The product of their successful work together is the development of the student's capabilities, interests and character. In one sense, the student is the teacher's customer, as the recipient of educational services provided for the student's growth and improvement. Viewed in this way, the teacher and the school are suppliers of effective learning tools, environments and systems to the learner, who is the school's "primary customer*."

The academic organization is responsible for providing for the long-term educational welfare of its students by teaching them how to learn and communicate in high-quality ways, how to assess quality in their own work and in that of others, and how to invest in their own lifelong and 'life-wide' earning processes by maximizing opportunities for growth in every aspect of daily life."

3.2. Total Quality Management Strategies in Education Process

In another sense, says Bonstingl, "*the student is also a worker, whose product is essentially his or her own continuous improvement and personal growth. The academic organization's stakeholders and "secondary" customers including parents and family, businesses, members of the community and other taxpayers have a legitimate right to expect progress in its stduents' competencies, characters and capabilities for compassionate and responsible citizenship not for the direct and immediate gain of the stakeholders but, rather, for the long-term benefit of the next generation and of generations to come. Total quality in education, as in life, is essentially generative. Within a total quality school setting, administrators work collaboratively with their customers: teachers. Everyone in the organization must be dedicated to continuous improvement, personally and collectively.*

Deming suggests that we "abolish grades (A, B, C, D) in school, from toddlers up through the university. When graded, pupils put emphasis on the grade, not on learning" (Bonstingl, 1992).

Bonstingl (1992) contends that if the academic organizations are to be true learning organizations, "*they must be afforded the resources, especially time and money, needed for training, quality circles, research and communication with the school's stakeholders: parents, students, businesses, colleges, community residents, taxpayers and others. Schools must also rethink practices that focus narrowly on students' limitations rather than their range of innate strengths. Howard Gardner has pointed out the self-defeating nature of a narrow academic focus, encouraging educators to acknowledge the existence of multiple intelligences and potentials within each student and to help students develop their intelligence more fully day by day*."

Barker (1992) identifies Total Quality Management as the most important paradigm shift of the twentieth century. He says that the paradigm "*has created an epidemic of quality throughout the world"* so that any organization that *"doesn't catch this disease may have a very difficult time surviving the next twenty years."* It is, he says, *"a revolution of the human spirit*" as it "*brings back spirit to the workplace*" and it "*creates an attitude of constant innovation.*" Innovation takes us into "*territories we have never been to before; and therefore, to be responsible to the future and to the things we value, we must develop a sense of anticipation of the implications of our innovations. This will allow us to pick from the many potential solutions to our problems and find the few that best support those values we wish to carry into the future*."

Barker (1992) contends that with increased productivity and innovation come a growing self-esteem in the workers which "*often leads to the request to self-manage*" as they realize that they can "*be in charge of themselves far more effectively than a manager can.*", says Barker. "*Self-management is the most democratic, most efficient and most powerful way to get things done. And it frees up those who are middle managers to use their intelligence for more productive and innovative purposes. No more pushing papers, protecting turf, building empires.*"

TQM principles applying in the educational environment, namely at the *classroom* level are summarized as follows. This will be the key focus of our discussion in subsequent sections of this paper:

a. Instruction is typically guided by a Pre-planned Curriculum

Resources and teaching activities are reviewed for content and appropriateness and are modified according to learners' experiences to increase their effectiveness in helping students learn.

b. Learners are carefully oriented to Lessons

Objectives may be posted or handed out to help learners keep a sense of direction. Facilitators or educators check to see that objectives are understood.

c. Instruction is clear and focused

i. Facilitators or educators are sensitive to the differing learning style of the learners, and when feasible, try to identify and use learning strategies and materials which are appropriate to differing styles.

ii. Learners are taught strategies for learning and for remembering and applying what they have learned....

d. Personal interactions between facilitators or educators and learners must be positive

i. Facilitators or educators communicate interest and caring to students both verbally and through such nonverbal means as giving undivided attention, maintaining eye contact, smiling, and positive head nodding.

ii. Learners are allowed and encouraged to develop a sense of responsibility and self-reliance. Matured learners, in particular, are given opportunities to take responsibility for school-related matters and to participate in making decisions about important school issues.

iii. Facilitators or educators foster positive ‘teacher-student’ and ‘student-student’ relationships through the use of cooperative learning strategies.

4. Implementation of TQM strategies in Constructivism Theory Based Learning Environment

Constructivism theory is starting to gain a substantial momentum in education process, and different versions of it have been used as a base for improving the learning environment.

As the focus in constructivism theory based learning is shifted toward the learner, and the learner is expected to play an active role in the learning process, the issue of quality is starting to be a critical question for educators, due to the absence of a clear quality system in constructivism theory. The lack of quality system to ensure the quality of the process and the content could create a vague environment and contribute negatively to the education and learning processes.

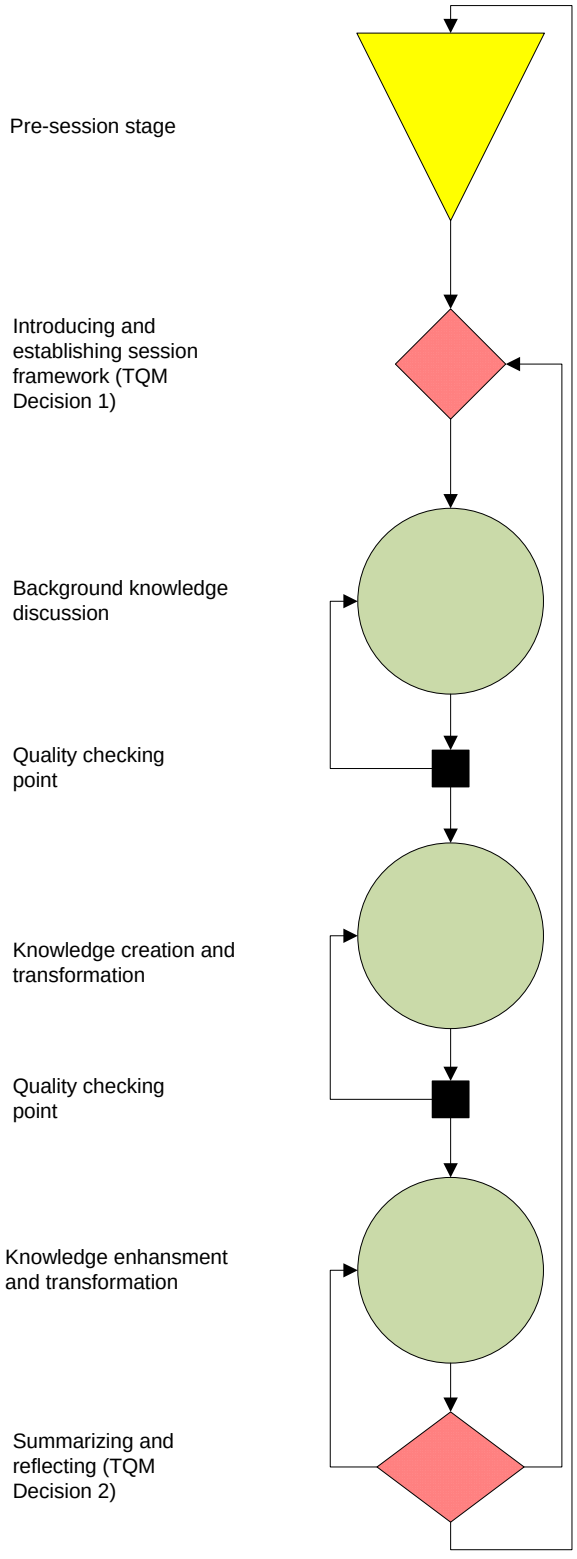
Another challenge to constructivism theory based learning is the increasingly demanding labor market. Nowadays, the labor market is requiring highly qualified graduates with wide and precise knowledge in their fields.

In this chapter the following section presents a model which could be used in any constructivism theory based learning session to improve the quality of learning outcome. We decided to start from this early stage since it is known that quality system has to be established through the whole system, i.e. from start till end.

4.1. Total Quality Model in Constructivism Based Learning Environment

The following model shows the total quality model for the learning session based on constructivism theory.

Figure 1 Total quality model of a learning session based on constructivism theory



As seen from the *Figure 1* the learning session is divided into different parts including quality checking points and decisions.

The model starts from the so called pre-session stage or the preparatory phase where the learners are provided with selected reading materials to be familiarized with the topic, different concepts and aspects related to session subject. We believe that this stage is very crucial and critical in quality process and content, and it will help in ensuring the quality framework of the session.

In here we are trying to address a major problem which we observed in constructivism theory based learning session. The problem is that many of the learners are lacking basic knowledge or background about the topic of the session. That usually yields two problems:

1. Lack of concentration on the session's topic
2. Limiting the active learner role due to shortage of knowledge of the session topic

These two problems could hinder the learning process and could provide unclear and inconsistent learning.

The next stage or phase is the introduction to the session where the facilitator establishes the framework of the session, including the main topics which will be discussed through the learning session. Additionally, the time framework for the session is to be established.

This step could be also called the first total quality management decision since it is in fact deciding the session procedure and that is a very critical issue in total quality management. Since procedures ensure consistency in the process and enable checking and reflecting on goals and assumptions.

On the other hand, this step reduces unnecessary uncertainty of the learner and help in aligning his understanding or learning process or function with the session structure and topic.

The next stage of the total quality model is the background discussion. The main goal of this stage of discussion is to ensure that all the learners have sufficient level of knowledge of the topic basics

and concepts. Furthermore, this stage could help the learners in understanding the basics, since it is quite common that part of the pre-session readings are not really clear to the learner, and jumping to a higher level of discussion can cause uncomforting feelings and may lead to depressing the motivation of the learners. At the same time this stage could be used to motivate the learner through the feeling of getting a grip on the basics of the session topic.

By concluding the pervious stage we arrive at the first quality checking point. The idea in here is to summarize the main issues in the previous discussion. At the same time the facilitator could help in explaining some unclear or problematic issues or concept. Alternatively, the facilitator could try to extend the discussion in order to clarify the unsettled topics. We think that this check point is actually testing the level of understanding of the learners and if they are ready to move on to the next discussion level.

The next stage in the model is the knowledge creation and transformation. At this stage the actual goal of the session is starting to be realized. The learners discuss how to use and build on the main concept which introduced earlier at the session. Additionally, at this stage a connection to previous experiences and the way how learners view the world start to be clear. These views and experiences are transformed from one learner to another and their connection to the session are shared and realized. Of course in here the facilitator role is to raise questions in order to direct the discussions toward the anticipated conclusions.

Reaching the second quality check point will help us to determine the content quality of the session and that the session is progressing toward the right direction and achieving its objective. Similarly to the earlier quality check point the discussion should be summarized and conclusions should be drawn in order to ensure that the group of learner arriving at similar state of understanding and ensuring the facilitator that the learners are ready for the following stage of learning.

The following step is the knowledge enhancement and transformation. At this stage the learners discuss for example the connection of the previous stage discussion conclusions and real life examples or possibilities of utilizations. At the same time this stage could be used to raise the connection to the next session and why it is important to the current session.

At the end of the session we reach the second total quality decision where the session in total will be summarized and main conclusions will be drawn. Additionally, the facilitator or educator should reflect the session outcome on the goals of the session and if they have been achieved or not. Furthermore, the learners' feedbacks are collected at this stage and reflected on the pre-session stage and the first total quality decision.

5. Model Testing

As stated earlier, the main goal of this paper was to establish a total quality model for a constructivism theory based learning session. The main aims of the model are to ensure both quality in process and content of the session.

Theoretically, the model has succeeded in establishing a clear procedure for the session which could be called the quality of process. At the same time the model ensure the flow of the knowledge in the session which is a critical in term of the session content.

Additionally, the model is believed to be flexible and could be adjusted for different topics. This flexibility is included in the discussions stages and kept the door open for the facilitator's or educator's creativity and usage of technology.

In order to support our theoretical approach, we have conducted some simple tests to validate its effectiveness by applying the model to selected modules of our courses. The test approach and results are summarized in the next session.

Test Case 1 – Mandarin for Foreigners

Course Summary

Credit Points:	3
Participants:	20 degree program and professionals from business (via open university)
Duration:	10 weeks
Contact Hours:	40hrs
Self-study:	45hrs

Module selected for testing: Pinyin, basic grammar, Chinese writing and vocabulary

This is the first time I am teaching Mandarin Course to non-native speaker. Although I am a native speaker myself and Mandarin is my mother tongue, I must say it is a pretty challenging but extremely interesting task.

Prior to joining the teaching profession, I was a banker. I worked in a bank for twelve years and have implemented total quality management system in five branches around Asia Pacific region. When I started my teaching profession, these qualities indeed have great influence in helping me to design, deliver, reflect and implement my courses, curriculum and syllabus. As such, when discussing with my peer tutor Anas, we both felt strongly about the quality management principles and how we can use them to enhance our teaching which is mainly built based on constructivism learning approach.

When I accepted the appointment as a Mandarin course lecturer, I have to design the course from scratch. There are virtually no good resources in Kajaani bookshop, library nor the University I will be teaching. As such, I relied mostly on internet resources and my contacts in overseas.

In the developing phase, I had some discussions with the enrolment coordinator, Ms. Tiina Kaipainen to understand the fit of the course to the overall curriculum, its basic objectives, the student mixed, and their respective background (e.g. culture, languages spoken, purpose of attending the course, interests etc).

Thereafter, I researched in the internet to determine what other Universities are offering, what are the typical objectives and scope for such kind of course targeting non-native speakers at the tertiary educational level. In addition, I also did some thorough research into the different delivery methods, syllabus, learning methods, activities, etc which can help me structure a more effective course for these adult learners. In the process, I have also considered the diverse mixture of my participants, not in terms of nationality, but their professional and educational background, age groups, genders, objectives, expectations, etc because I believe this is an important consideration to enhance their learning capability under the constructivism learning model.

After screening through all my research materials, and portfolios built for the subject, I established a basic framework which includes the objective, syllabus and scope of coverage. Based on this framework, I started to build my portfolio and design my materials, activities based on the background knowledge about the participants.

Since this is a language course, the initial delivery is based on 'behavioral approach' oriented, i.e. I will 'tell, show and demonstrate', whilst the participants will 'listen, observe, imitate, repeat' and being drilled rapidly to enhance accuracy and retention rate. I have also compiled a textbook by selecting the most appropriate resources from the internet based on my understanding of the language, and the participants' background.

After establishing the basics, I then include in my consideration the diverse learning style and background of the participants in order to design various kinds of activities which I hope will help them to learn and retain the new knowledge better. I also considered the environmental constraints, i.e. this is a non-Mandarin speaking environment, so, once the class is over, theoretically speaking, there is no proper venue to support further practises. So, I have also designed a 'system' and structure to support their off-lecture learning… this include incorporating a mandatory 'peer group' support, and 'group assessment'. With this, I hope to create an internal 'environment' to help the participants put what they learn to practical use.

Lastly, before the start of lesson, I constructed a website to support the participants' learning needs after lecture hours. These include video clips about the history of the language and Chinese culture which they can view at leisure, useful and interactive weblinks to help them build listening and pronunciation skills, dictionaries to help them build vocabulary, games to boost and maintain their interests on ongoing basis. I also established a discussion forum which I hope can facilitate their learning through sharing and social networking.

In the first lecture, I shared with the participants, the objective of the course, the basic framework, course structure along with a short video clip to kick start the introduction of the subject. Thereafter, I also discussed about their purpose to participate, what they hope to achieve after the 10 weeks course and their specific areas of interests. In addition, I also asked what are the 'type of activities' they would like to have which they think will enhance their learning.

I have also divided them into 4 different study groups. The members are 'self-selected', i.e. the participants divided themselves based on their own comfort, or time table, or other criteria. The group ages vary from 19 years old to 55 years old, consisting both working professionals and students from tourism, engineering and business schools.

After the first lecture, I can roughly classified the group into following learning styles:

- Audio learner - Learn by listening, imitating after the teacher or web resources
- Learning by doing, e.g. individual and group drills
- Visual learner, e.g. video, power point, charts, wall posters

Additionally, some of the students express their needs for reading about the topic before the lecture. This request was fulfilled by my 'self-compiled' textbook and the website I have built.

The implementation stage in this course focuses on teaching the students with the phonics of Mandarin. In addition, I have incorporated some very basic, simple vocabulary and phrases to help them appreciate and understand how the phonics is applied. These basics also aimed to spice up their learning (in view they are adult learners), capitalizing on their experiences and knowledge and enable them to apply in practical manner. Materials are given ahead of time (the textbooks and

website), however the actual learning commenced in the lecture, and the participants built their language capabilities by using all their senses, listening skills, experiences and knowledge of other languages.

As their teacher and facilitator of this world known difficult language, apart from imparting the pronunciation techniques and grammatical application skills, I see my other key roles include creating a good learning atmosphere (fun, enjoyable, interesting) and interactive environment. With this in mind, the class usually start with a revision session which consists of games, practise drills, role play, 'controlled' conversations amongst participants and/ or myself. Thereafter, I will add in a new vocabulary, or phrases, or grammar to build upon what was learnt from previous lessons. The explanations given and activities implemented are designed to draw or build upon the participants' existing skills, experiences and knowledge.

Once I am satisfied that they have attained the learning objectives for the session, I typically split them into smaller groups to practise. At this stage, the groups are exchanging information about what they have learnt and understood about the subject of the session. As they attempt to practice and apply, they share what they know, helped each other think and learn at the same time.

Depending on the drills, exercises or games, I may split them in accordance to :

- 'level/ progress', advance and slower learners are grouped separately
- 'interest', participants with similar interest are put together to work on exercises designed on this aspect.
- mixed, i.e. putting advance and slower learners together so that they can help each other through social interactions.

The quality checking point at this stage ascertain if the students have grasped the key learning points for the session, e.g. to pronouns the various phonics, or apply the grammars, vocabulary learnt etc.

After above check point is cleared, the next session focuses on the knowledge creation and transformation could be characterized by the student's ability to freely apply what they have learnt and retained these new knowledge. At this stage, activities are structure to fulfill this objective.

At the final stage of the session the main learning points are summarized and reflected. A grand revision and some basic assessments (both written and oral) will be carried out before moving to new topics.

At the completion of the course, I will also asked the students if they are comfortable with the activities, style, how they felt about the session and whether the session has addressed their needs, motivated their desire to learn and kept them interested.

Finally I will also ask the participants to comment on the session system and if there is anything should be changed or added. This is done through an electronic survey posted in the website.

A simple illustration of how Total Quality Management Model is applied to the Basic Mandarin for Non-Native speakers course:

Quality process in a Constructivism learning based environment	**Curriculum and Objective**
Pre-session stage	1. Refer to 'pre-selected' internet resources 2. Refer to relevant materials for the topic 3. Orientate participants what are the objectives and contents of the topic… a preview, illustrate with 'example' to give an 'idea'.
Introducing and establishing session framework (TQM Decision 1)	1. Show short video clip (in class) 2. Introducing the basics, e.g.: - 'Say Hello', 'Self Introduction', learn own name in 'Chinese' - Basic grammar points (Noun + verb + subject) = I am <name> - Draw upon similarity of concepts or applications to English or Finnish grammars. 3. Divide class into groups of 4, as peer support and study group for the duration and hopefully after the course. (Mainly to

Quality process in a Constructivism learning based environment	Curriculum and Objective
	address challenges where the environment does not support learning of Mandarin)
Quality Checkpoint 1	Drills and Practices - Repetitive drills re the basic knowledge introduced, e.g.: - students repeat after teacher - teacher goes round each students (seated in circle) to say hello and introduce self. Student do the same - student say hello and introduce self to at least 5 course-mates (free walking around) - recognize 'romanized pronunciation' (posters on notice boards and around classroom) - Use these greetings before start of every class, greet thy 'neighbor' coursemates upon arrival (the one seated left and right).
Background knowledge discussion	1. Tell 'related' cultural stories or histories where applicable. 2. Build upon the basic, learn new vocabulary, extend application e.g.: - Using 'men' particle to express 'plural form' - Learn new vocabulary student, teacher - Differentiate the grammar application from English and Finnish - Differentiate the grammar 'verb-to be' in Chinese language from English and Finnish - Provide several rounds of examples by going round to every students (seated in circle) to practice and reiterate the application. Use 'hand signs' to help understanding. E.g. point to 'I' when say 'wo', point to each other when say 'ni', draw an 'invisible circle' around all in 'we' when saying 'wo men' etc.

Quality process in a Constructivism learning based environment	Curriculum and Objective
Quality Checkpoint 2	Drills, Practices and some times interactive games - Peer group practice and feedback* - Flashcards and posters* - Interactive computer games (selected from internet resources)** * Open to peer feedback in class or within group ** Progression of games, scores, etc.
Knowledge creating and transformation	1. Build further depth to the knowledge, e.g.: - Grammar: Also (ye) - Vocabulary: Finnish, Malaysian, Good morning, Good afternoon, Good night. - Highlight similarity of application with English and Finnish grammar, i.e. I am also… / Minä olen myös…. But differentiated 'positioning' of 'ye' in Chinese language. - Provide several rounds of examples by going round to every students (seated in circle) to practice and reiterate the application. Use and apply with all the previous vocabularies and grammars learnt. Built upon students' previous experience and knowledge (from earlier lessons and also other languages) 2. Introducing basic writing strokes and learn to write and recognize very simple characters selected from the range of new vocabulary learned.
Quality Checkpoint 3	Drills, Practices and some times interactive games - Peer group practice and feedback* - Flashcards and posters* - Interactive computer games (selected from internet resources)**

Quality process in a Constructivism learning based environment	Curriculum and Objective
	* Open to peer feedback in class or within group ** Progression of games, scores, etc.
Knowledge enhancement and transformation	1. Build further depth to the knowledge, e.g.: - Grammar: How about you (interrogative 'ne', 'ma') - Highlight similarity of application with Finnish grammar, i.e. 'ko/ kö'. - Provide several rounds of examples by going round to every students (seated in circle) to practice and reiterate the application. Use and apply with all the previous vocabularies and grammars learnt. Built upon students' previous experience and knowledge (from earlier lessons and also other languages) 2. Introducing basic writing strokes and learn to write and recognize very simple characters selected from the range of new vocabulary learned.
Summarizing and Reflecting (TQM Decision 2)	1. Grand summary of the topics learnt todate. 2. Oral Assessment a. Group Presentation-A 20mins play written by applying and using all the vocabulary, grammar learnt throughout the session. Additional 'researched' materials are welcomed. Feedback session b. Individual Reading and pronunciation test 3. Written Assessment Writing Chinese character, recognizing words, application of grammar

Summary of Test Conclusion

- The students from the Chinese course have high self-motivation driven by their own interests and reasons (mostly not because of credit points, but because they truly wanted to learn or know about the knowledge – See Appendix 1 for more information).
- Major challenges are:
    - Group size (18 in a class)
    - Group mix (age, background, gender, professions etc)
    - Students' diversified interests and drivers (e.g. exchange in China, progress career in Beijing, interests about Chinese culture and language, travel and tour, watch Chinese movie, etc)
    - Different progress and absorption rate, learning style, etc.
- The pre-course materials (e.g. short video, stories, history) captures and simulate the interests of the students, trigger their 'desires' to learn the foundation knowledge of the subject matter (although very boring and mechanical)
- The orientation, and short 'illustrations' gave the 'student' an 'interesting exposure' on something they have never 'learn before', enticed their interests further.
- I have also 'adjusted' my style, delivery methodology and contents considerably consideration of the nature of the course, the participants and their learning styles.
- I was also able to modify the learning pace and insert appropriate learning activities that can help different groups of learners to learn more effectively and efficiently. E.g. I typically start with 'a target' scope to teach, however, through the 'checkpoints', I will adjust the teaching 'pace and speed', 'what activities to implement' and 'how to implement'; decisions are guided based on the result of the 'Quality checkpoints'.

Ruey's Self-reflection of the Quality Model:

- The Quality Model has yield very positive results in this course. These include:
    - The variety of activities designed based on the Constructivism learning approach were 'surprisingly effective', students were able to learn and apply what they

learned, and the ‘retention rate’ was pretty amazing (I would estimate approx. 80% or above for majority of students)

- The ‘Quality Checkpoints’ were implemented at the right points to determine students’ progress (e.g. their understanding, ability to apply etc), hence assisting me to determine next step forward, or division of the group for different exercise (e.g. basic versus intermediate levels), to help weaker links and to ‘build’ more depth to fast learners.
- Group activities facilitated peer learning and support.
- Peer group (four to five students in each group) closed ‘environment gaps’, i.e. it created a ‘safe from embarrassment’ atmosphere to practice, and also giving additional opportunities after class to practice (as part of self-study hours and to prepare the final ‘play’ for assessment).
- The variety of activities designed based on the Constructivism learning approach and to some extend the students’ learning approaches were effectively applied to support the powerpoint lectures.
- Timely feedback sessions (360 degrees-teacher, peer group, and student’s self-review) simulate students’ learning, and motivated them to move forward

- Although the results were generally positive, it was observed that there are still opportunities for refinement. These include:
  - Position of checkpoints and frequency – As seen in the matrix, I have to ‘add’ more checkpoints to the model to over come the challenges resulted from applying constructivism learning theories to teaching a ‘new, alien language’. However, I am very pleased with the results and feedback from students which are extremely positive…. It is evidenced that the ‘specially designed activities’ together with all the added checkpoints made the model feasible and effective.
  - I have made ‘adaptation’ of the class activities designed for ‘smaller group’ to the larger crowds, however, upon reflection, I believe there are still rooms for improvements in view of the diversified interests, learning approach and capabilities (more variation and differences). E.g. to include vocabulary and simple phrases

related to students' interests as one of the 'motivation' for learning new 'grammar rules', application etc.

Ruey's developmental review:

Personally, I am very pleased with the results of implementation and test outcomes although there is still much room for refinements and improvements.

I have been applying the Total Quality Management Model in my corporate career over the last 12 years, and I am very glad that I could put these principles to good, effective use in the academic environment which to some extend helps my personal development as a teacher.

The Model helps me to focus on the "Three Cs" i.e. Customers, Culture, and Capacity for continuous improvement. Applying these to the courses I am delivery, it helps me to create a 'product' with contents that are suitable and fitted for my students' specific needs and value-add to their practical life.

It also helps to eliminate duplication of efforts as a result of re-work because the Model helps to ensure the quality of learning outcome resulting in students' motivation and satisfactions.

It also helps my student and I to successfully implement a continuous change strategy which involves a commitment to create a specific kind of learning culture for the course, based on trust and shared decision making, e.g. 360 degrees feedback sessions on timely basis so that any deficiencies, dissatisfactions and preventive actions can be implemented immediately.

The quality Model has facilitated the cultivation of 'systematic change' to my learners, helping them to learn, accept and retain a brand new language and culture where I can successfully draw upon their past knowledge and experiences. With this, I hope it will help them for continuous development in the future upon completion of the course.

Last but not least, through this project, I was also able to fulfill other personal goals stipulated in my PLP. These include:

- Further develop my teaching competencies and skill sets by applying and combining my previous academic qualifications and professional experiences

- Update my academic proficiencies in the selected field of specialization
- Build network of peers to support continuous development in teaching profession and also in the area of specialization

Test Case 2 - International Marketing

Course Summary:
Credit Points: 5
Participants: 20
Duration: 20 weeks
Contact Hours: 54 hours
Self-study: 76 hours

Module selected for testing:

Quality process in a Constructivism learning based environment	Curriculum and Objective
Pre-session stage	During the developing process of the total quality approach model, I started to investigate the possibility of including different learning methods due to the increasing attention of this issue in the recent educational environment. The idea in here is how to integrate diverse learner issue in the model and turn this factor to a constructive and enriching factor rather a negative and destructive factor . One group of my students was the second year and exchange international business group, this group is quite diverse and interesting group and suite very well the goals of this test implementation of the total quality approach model. As a start I decided to discuss with them their style of learning, in another words how they learn and which method they prefer and why. At this discussion I didn't explain any learning methods or styles, since my intention was to let them explain their learning style by their own words, at the same time they will not feel forced to use any especial terminology. The students group consists of nine different nationalities, with two Africans, three Asians and four Europeans. The group ages vary

Quality process in a Constructivism learning based environment	Curriculum and Objective
	from 19 years old to 29 years old and nine different cultures and backgrounds. When I tried to classify them I notice that they are very much affected by the educational system in their home countries and in many cases this effect confused the student. Since it was sometimes difficult to distinguish if the student is describing his/her own learning style or the one used to in his/her earlier educational process. After about two hours of discussions with the students I could describe the learning styles of the group as following: 1. Learning by listening to the lecturer and by class discussions and writing their main findings after the class 2. Learning by continuously writing notes and following the lecturer 3. Learning by doing especially case studies 4. Visual learner for example videos and so no. Additionally, some of the students express their need for reading about the topic before the lecture, others ask for printed version of lecturer slides to be available before the lecture. The implementation session were concerned with case studies in international marketing. The cases were representing global and international companies and the challenges they face in going to new countries markets, in first session the company was the famous coffee company Sturbucks and in the second session was the Coca Cola and Pepsicola companies and their market entry into India. The case studies presentations materials were send to the students

Quality process in a Constructivism learning based environment	Curriculum and Objective
	few days before the session in order to address the needs of some of the students where they need to read the case studies before the session.
Introducing and establishing session framework (TQM Decision 1)	As the instructor of the course I usually set the framework of the session to the students. Then two of the students are presenting the case study to the others where they present the main facts about the company and the market circumstances and different difficulties and challenges faced by the company. At the end of the presentation the students presented with few challenging questions about the case study. The case study and the question present a multi-dimensions challenge. Additionally, the student watch a video about the company where some of the senior management of the company talking about their strategies and policies. Also the nature of the company and problem faced in certain markets areas. Usually, these challenges provide the students with motivation for learning and participating in the session.
Background knowledge discussion	The next step is the group discussions. In here the students form a 2-3 students groups and then discuss the case study and try to answer the questions. At this stage the groups is exchanging information about the subject of the session (the company) and review different possibilities and options.
Quality Checkpoint 1	The quality checking point in here is mainly to ensure the following: 1. Have the students understood the main the problem of the company in its market entry 2. Have the students understood the circumstances and conditions of the market 3. Have the students understood the companies' marketing

Quality process in a Constructivism learning based environment	Curriculum and Objective
	strategies 4. Have the students understood main marketing entries possibilities of the company.
Knowledge creating and transformation	In this session the knowledge creation and transformation could be characterized by the student's ability to elaborate different types of information in order to create a unique solution for the company problem. At this stage the students still discussing the within their small groups. At the same time they are trying to prepare reasonable answers for the challenging questions.
Quality Checkpoint 2	This quality checking point takes place in the group's level and usually I talk to the groups and discuss briefly their findings and proposed solutions and raise questions if these findings contradict with main marketing principles or with some of presented facts. Usually this discussions are very helpful for both the instructor and the students since it provides a clear picture about the level of the understanding of the students, and if there are some issues are still unclear and need to be emphasized at later stage
Knowledge enhancement and transformation	At this phase the groups start to present this answers and opinions about the case study's questions. After they presented their findings the discussion about these answers is starting and every group try to explain and justify its own answers. The general outcome of these discussions is that the students really understand the topic of the session and how to tackle similar problems which s/he could face in future.
Summarizing and Reflecting (TQM Decision 2)	At the final stage of the session the main findings are summarized and reflected on the main marketing principles. At the same time the clarity of the findings are briefly discussed. As I have classified

Quality process in a Constructivism learning based environment	Curriculum and Objective
	the students style of learning earlier, a representing sample of the every learning style is asked about how they felt about the session and if the session has addressed their needs. Finally I asked the students to comment on the session system and if there is anything should be changed or added.

Summary of Test Conclusion

- The pre-course readings helped to address the diverse learner issue. Pre-session materials helped some students to establish foundation knowledge of the subject matter, but at the same time, as expected not all students went through. The group discussion phase were very effective in balancing and exchanging the knowledge gap among the students

Anas's Self-reflection of the Quality Model:

- In my opinion, the Quality Model has again yield positive results in addressing special needs of the students and provided them with the recommended motivation type by the Constructivism theory.
- Additionally the following areas were also covered:
  - The variety of activities designed based on the Constructivism learning approach were effectively applied to support the session content
  - The 'Quality Checkpoints' were implemented at the right points to determine students' progress (e.g. their understanding, ability to apply etc), hence assisting me to determine next step forward.
  - Timely feedback sessions (360 degrees-teacher, peer group, and student's self-review)

6. Conclusion

The main goal of this paper was to establish a total quality model for a constructivism theory based learning session. The main aims of the model are to ensure both quality in process and content of the session.

This has been tested and validated to yield positive results by the Authors, Anas and Ruey. As seen from the test results, the clear procedures established under the Quality Model have improved the quality of the sessions, both contents and delivery. It has also resulted in smoother flow of knowledge, consistency and quality output from the students.

The test also confirmed that the model is indeed flexible enough to be adjusted for different topics. Also the tests reveal that the model is helping in addressing learning needs of different students.

As earlier discussed in this paper total quality in education is starting to be of crucial value for the higher educational institutes and we strongly believe our model will help facilitators or educators in developing a more quality sessions with an enhanced learning outcome for the learners when applied appropriately.

7. Reflection of the Development Project on Authors Teaching Practice

Both authors are familiar with the Constructivism Learning Theories, and recognized the necessity to control both the process and content to enhance the learning outcome of their learners. Although both authors are also familiar with the Total Quality Management Model, but to combine and implement the two schools of distinctive theories into one teaching model is fairly challenging.

The idea came about in a casual conversation between the authors on their train ride to Jyväskylä, and since the authors have been actively exploring what are the possible ways to establish a model that is flexible enough to be applied in the different curriculums, varied teaching methodologies developed under the Constructivism Learning Theories and the diversified learners' needs.

After many levels of discussions, the model was finally established. The main effects of the developmental project outcome is that the author has obtained and developed a quality controlling process specifically designed for the constructivism theory based sessions, which reflected positively on the level of confidence and satisfaction in using such approach as a base for their own teaching curriculum.

In addition, the developmental project also helps the authors to successfully integrate the needs of different learners into the session learning structure instead of handling it as an external process which could further complicate the learning process during the session.

Thereafter, the next challenge was to explore and determine how to implement it to the author's own curriculum and to assess the results of the implementation. During the implementation stages, the authors have also been engaged in active discussions to exchange ideas and at the same time reflect how certain processes can be refined or adapted further. Along with the thinking and reflection process, the authors gradually discovered more and more connections of the model they have developed under this project to their own teaching curriculum and learning outcomes.

On overall basis, apart from establishing a reasonably successful and flexible model, one other important lesson learned was how collaboration between two teachers from varied background and experiences can help facilitate each other's learning and personal development. In the process, the authors were able to bring out the best in each other and apply these to the fullest advantage. Putting their heads together, they were successful in transforming their strengths into powerful sources that finally result in the development of a practical model that will benefit themselves and their learners for life.

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