Education Perspectives

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  - A brief description of methodology
  - The result of the study supported by relevant data
  - Discussion of findings / Recommendations
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TRANSFORMING 21ST CENTURY SCIENCE EDUCATION FOR ALL STUDENTS

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ABSTRACT

As the 21st Century advances, pressures increase upon nations and their schools to transform teaching and learning to better match the current and future expectations for college and career readiness. Rethinking what learning must look like, there is an increasing response in the U.S to improve elementary (K-8) science instruction through project-based inquiry (PBI). PBI, a version of project-based learning which aligns with the Next Generation Science Standards, looks to produce deeper learning outcomes in contrast to the surface learning common in U.S. schools. This article describes deeper learning and the relationship of 21st Century Skills as the process and the result of standards-aligned inquiry that is aimed to motivate students elementary students to think like scientists. It sketches description of the 7 element process with elementary school examples as well as an identification of the 21st Century skills which contribute to deeper learning within each PBI unit.

Major Key Words: Deeper Learning, 21st Century Skills, Project-Based Learning, Project-Based Inquiry, Inquiry, Reflection, Learn from Doing.

Minor Key Words: Communication, Collaboration, Critical Thinking, Problem Solving, Creativity, Innovation, Self-Directed Learning, Balanced instruction, Driving Question, Guided Questions, Formative Assessment, Guiding rubrics.

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> "Scientific principles and laws do not lie on the surface of nature. They are hidden, and must be wrested from nature by an active and elaborate technique of inquiry. "
>
> — John Dewey, *Reconstruction in Philosophy*

"Dewey is all well and good in theory," the graduate student replied. "But I have the standards, a 45 minute class period, chairs in a row, a script to follow, 32 antzy 7th graders, three computers and one sink. How do I teach inquiry with that?"

"There is no doubt that it's hard. But let's think of the standards as a starting point," the instructor said. "The new science standards may leave a lot to be desired, but I like to look at them as the start of a tough race….the high hurdles."

"So what do we do?", the teacher asked.

"We think like scientists. We use our minds to overcome static matter. We ask, problem solve and design solutions that will help us take those antsy kids below the surface. It all starts with inquiry and teaching them how to inquire. "

The Problem Described: Science Practice: Surface or Deep?

The split between Dewey's grand inquiry vision and the harsh reality of too many classrooms has split the American elementary science community for decades. With the second decade of the 21st Century already well on its way forward, international tests such as PISA, new sets of science standards and a call for 21st Century Skills have not ended the debate. In the U.S. and other nations around the globe, pressure continues asking teachers to raise student performance in mathematics, science and many related fields.

We believe these are valid requests. We also believe that the best responses must focus on what makes a new look at elementary science education possible is not a continuation of what we have done in the past by just doing more of the same old, same old. We believe there is a demonstrated need for deeper learning of science which demands a deeper learning response that starts in the elementary grades. Whether a school or system has had minimal science education in the past few decades or has enabled students to try hands on experiments, now is the opportune and necessary time to take a great leap forward.

In some schools, teachers have had more than sufficient preparation, well-equipped labs and science materials ready at hand for deeper learning of science. They are predisposed to preparing their young students to think and learn below the surface by examining worms in a classroom box, watch larvae transform into butterflies, or build robots that zoom across a test course set up in the back of the classroom. Science activities which enable students to follow Aristotle's advice to learn-*by*-doing are common place in these places.

Many teachers in the U.S. and other nations, however, work in classrooms which are too similar to the story cried by the graduate student in the above vignette. They are shallow learning classrooms. In the best scenarios, these teachers are unable even to rely on up-to-date text books so that their students can read about flowers, birds, bugs and beasts or watch an out-of-date video about laser beams. At the end of the week, many elementary teachers of science still must remind their students to get ready for Friday's exam which will check their recall of the bold black vocabulary words from their text out-of-date books. In the worst scenarios, science doesn't appear in *any* daily schedule, there are no science books and no inquiry.

In schools that do include science in the curriculum, current science practice in the U.S. falls into three categories. First, there is the "sit and git" memory school. Its advocates provide lots of seat work with textbooks, teacher lectures and worksheets. Second, there is the hands

-on activity school. They have tuned into Aristotle's plea "learn by doing." After students' hear a lecture, watch a video or read about the principle of buoyancy, the teacher provides a demonstration that allows students to compare the floatability of different size rubber balls and other objects or to go out of doors and collect bug or leaf samples. The students attempt to match the guided experiment with what they recall from their reading, a movie or the teacher's talk. "What did you see that was different? The same?" they are asked. The teacher ends the lesson by providing a summary of the differences "which will appear on the final exam." None of these practices move children's learning of science below the surface with its addiction to rote recall.

There is a third, emerging group who advocate that students *do* hands -on projects so they can learn, as Dewey advocated, *from* inquiry and engage in deeper learning. In some cases, these students, test-selected as having sufficient talent to engage in inquiry, may be scheduled in a special "gifted" class or they may join an after school club open to all. In these classes, the select few engage in significant units of study in which they may investigate chemical changes in their local soil, solve complex rubics-cube mathematics problems, design and test robots, or build a giant telescope inside a geodesic dome. In a very few cases, this deeper learning approach is becoming part of the daily curriculum. It is these classes that blend reading, writing, thinking, social studies, the fine arts, digital media and mathematics in practice with the rigorous science content. It is a new paradigm of deeper science learning for all that has a goal of preparing all students to think and learn like scientists.

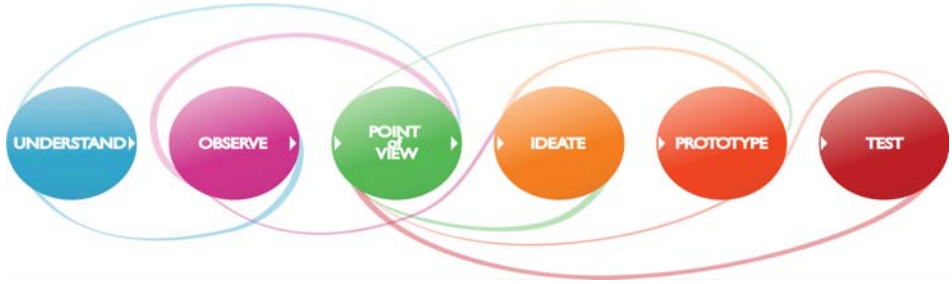
The Response: Dawn of a New Day

The 21st Century has introduced the possibility of a paradigm that celebrates and practices deeper science learning. In reaction to the stultifying and superficial recall models of instruction cemented in place by *No Child Left Behind,* today's teachers of elementary science are waking to see the sun rising on a new day. Helped by the sun's

illumination, teachers are rediscovering the value of Dewey's ideas as the doorway to deeper learning science experiences. They are able to take what Aristotle proposed about learning *by* doing inquiry and follow Dewey's dictum for learning *from* doing. "We do not learn from experience", he said. "We learn *from* reflecting on experience." Such inquiry encourages students to reflect on their inquiry experiences and transform the ideas into results or outcomes that are more appropriate for 21st Century learners. This is the avenue to what is named "deeper learning" as distinguished from superficial or surface teaching, the obsolete learning approaches that were the hallmark of past decades.

What are examples of deeper learning practices? The most effective fall under the generic heading labeled Project-Based learning (PBL). There are three prominent versions of PBL.

- First, there is the inquiry-propelled unit of study which starts with a driving question of authentic interest to the students. It is called Project-Based Inquiry (PBI).
- Second, there is the Problem-Based learning approach which starts with an authentic problem defined and solved by the students.
- Third, there is the design project, based on a design model from Stanford University. This model starts with students gathering information so they can understand an issue such as low gas mileage in farm tractors or how to design a faster bike. It ends after the students build and test a prototype and then learn from reflection about the design process.



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All three versions have common characteristics that create deeper learning value in 21st Century schools…for all students. In our experience, the inquiry version, PBI, is the one most easily adapted to the elementary science curriculum. With PBI, elementary students learn the principles and practices of their rigorous science content simultaneously with their learning how to gather information, organize the data and then produce an answer.

Pre-K students at Reilly Elementary School, a 90% Latino population in Chicago, have already shown how they could come up with definitions of *pulling* and *pushing* for their Force unit by studying machines on their playground and eventually designing their own machines to illustrate what they had learned. Instead of the teacher pouring information into their heads by talking, showing a movie, demonstrating or other traditional instructional means, the teacher structured a Force PBI to be guided from the side. Her coaching enabled students to reflect on what and how they were learning. They tested *push* and *pull* with each simple machine and measured the results. Then, they spent time assessing what they had accomplished and searched for more examples of push and pull at home.

It is from this purposeful reflection *about* "doing" that the students learned *about* the science concepts before they went on to learn more by making their own machines and then reflecting on what they had done. The unit's emphasis on guiding rubrics for formative assessments throughout the PBL unit and the summative reflections at the end made the distinction between "by" and "from" more than a semantic difference for these students.

This unit and other more complex PBIs in the upper grades changed the Reilly students from passive recipients of information presented by a teacher into active generators of knowledge. Seventh graders investigated the nutritional value of their cafeteria food before designing and serving a new, more healthy menu that reflected their Hispanic culture. Sixth graders asked "What matters about matter?"

and the eighth graders asked “What’s the connection?” for a PBI that investigated “relationships” in an interdisciplinary PBI that connected mathematics to science in a single unit.

At Reilly and other schools building including Benjamin Franklin Elementary School in Glen Ellyn, Illinois, a school which was recently identified as an exemplary model of 21st Century Instruction by the national Partnership for 21st Century Skills (www.P21.org/exemplars), elementary teachers are reconstructing traditional science units built on the MindQuest21sm PBL model. As they do so, they put into practice their own new understandings about teaching and learning which they have learned *from* doing a project of their own.

What are these new understandings?

1. Memory plays a part in learning, but cognitive and neurological scientists have shown that memory is no longer the centre of what is known about how children learn. (Willis 2006).
2. Brain research says memory is not the whole ball game as was believed in past decades. In fact brain scientists estimate that in an engaging learning situation such as provided *via* PBL, memory contributes less than one-sixth of the intellectual activity that occurs. Thus, engaged PBL students are not just learning *about* the scientific terms or procedures memorized. They are laying the groundwork for transfer of what and how they learned by developing their critical and creative thinking skills for problem solving applied to their understanding of the content.
3. In addition, these researchers note that the best projects are inter-disciplinary. Instead of isolating subjects into little boxes, PBL enables students to make the natural connections they need to complete a deep study. For instance, when studying a classic topic such as force and motion in a PBL, MindQuest21 students have the opportunity to integrate mathematics,

language arts and history so that they have a fuller understanding of these concepts. In addition, they can connect the study to their own authentic questions about the topic, questions that make force and motion or other science concepts relevant to their daily lives so that they do not feel compelled to ask "Why are we studying this?"

4. In project-based learning, students also enrich their learning by having the opportunity to make significant choices that lead to increased self-direction. Student's asking questions, a skill that they must develop to do well, is an essential practice in every deeper learning PBI. Consider, how often in a single PBI unit students are challenged to "dig deeper" with *their* questions.

    - The first choice point is the driving question. What is it they are going to investigate? Even when framed by the standards or other curricular restrictions, students develop the driving question, one that cannot be answered on or off-line by facts (a la Google or Yahoo), causes thinking and is relevant to their needs.
    - After the driving question, students make choices about what and where to research, what questions to ask and how to make sense of the data they find.

      When gathering information about their machines, the Reilly students worked in teams to first learn how to ask questions and then apply this skill to find on-line examples and to survey their homes for examples to answer their questions.

      They recorded their information on a simple newspaper graphic organizer that made a matrix of their responses to guiding questions which asked who, what, when, where, why and how.
    - Finally, students choose how to make a product and present their information. In a single class, 10 student

teams that started with a single, student generated driving question could end up with 10 highly different products and presentations and 10 conclusions. In the pre-K Force project, each Reilly team of three students sketched, constructed and tested a prototype simple machine and made a simple power point to show how force was impacted. In their presentations, they demonstrated *push* or *pull* and told what they had learned about *force*.

The Starting Point

The Next Generation Science Standards, (NGSS) are the starting line for MindQuest21 science students who are being guided to learn from lessons that end with deeper outcomes. When analyzed from a student's perspective, these standards give clues about the type of thinking that will help them dive deep into the content that is stipulated. Although some critics believe the standards appear to take away individual choice, in actuality, the Next Gen standards help teachers organize the curriculum and ensure that all students have equitable learning opportunities to develop a full array of science knowledge and practice. The benefits are many.

1. **Increased Focus.** In a classroom project, as in a real science lab, the standards keep a focus on what topics are most important in the total curriculum as well as what method of working, inquiry and investigation, is preferred. Students can spring from the starting line and run as far and fast as they are able when the content and the process are married.
2. **Integrated Socio-Emotional Growth.** Project-based learning integrates socio-emotional growth into every unit. The best of PBL units are collaborative and interactive. Students build their cooperative social skills and communication as they work with peers through projects. English Language Learners especially have increased opportunity to interact with native language peers and bring diverse cultural perspectives to the problem solving arena.

3. **Deeper Learning Outcomes.** The agenda is deeper learning. Critical and creative thinking, problem solving, self-direction, collaboration and multiple forms of communication are intentionally developed. Students do not sit passively while teachers talk to them. Students spend more than 75% of their time interacting with peers, solving problems and finding novel solutions. They then reflect on what and how they are learning so they can transfer new ideas outside the school walls. These deeper learning outcomes, not easily measured by standardized tests that check for superficial recall, are observable and manageable as tools to help students develop deeper knowledge while noting how their learning-to-learn skills are expanding.
4. **Time is restructured.** Because of the interdisciplinary structure, PBL allows students to learn many different "things" in one block of time. There is more efficient use of time with a PBI even before the so easily observed intrinsic motivation factor kicks into high gear. As a final result, these engaged and more motivated students learn more and more deeply in less time than when they are sitting passively in a traditional classroom.
5. **Students learn to think and learn like scientists.** Picture the physicist in her lab at Argonne National Laboratory. As she measures the speed of atoms, she tests her math skills. When the cyclotron breaks, she calls on her problem solving skills. When she needs a highly specialized tool not in the budget, here comes her design skill. She goes to her supervisor and falls back on her persuasive talents to answer the tough questions the supervisor poses. Ultimately, she goes back to her knowledge of atoms, lasers and other understandings about the physics involved and works in collaboration with her peers to rectify the problem. PBL in it's a various iterations is the only model of instruction that makes it possible for students to think and learn like this scientist, a disposition of high economic value for the 21st Century learner.

6. **What goes around comes around**. In the strongest PBI science units for the elementary grades, higher order assessment guides higher order instruction. Teachers as mediators of learning provide students with rubrics at the unit's start. Students use these rubrics to assess learning in progress. All students can work from like assessments, or teachers can personalize rubrics to fit individual or small group needs. At the end of the unit, teachers can use the same rubric to ascertain how far the student has come in meeting content expectations, developing 21st Century skills or reaching Deeper Learning outcomes. All in all, the selected assessment tools start and end the learning process.
7. **"Learn how to fish"** is the admonition that fuels the rocket bursts of intrinsic motivation in PBL science units. In the short run, teachers must attend to the science curriculum requirements via the new content standards. However, more important is the long run. In this race, teachers intentionally build the inquiry, problem solving and design skills that are the heart learning how to fish. Learning-how-to fish provides life-long skills and a love of scientific inquiry that last well beyond a single test that is soon forgotten.
8. ***All*** **Means *All*.** Project-based learning is a model of teaching and learning that benefits all including special needs, students of poverty and females. For teachers, the benefit is discovering that students do love to learn, don't have to be discipline problems and will make discoveries that are a pleasant surprise. For students, PBL takes away many of the barriers that can make learning difficult and frustrating. ELL students have the opportunity to practice their new language and bond with their peers who help them find a way to express what is difficult; special needs students blend into teams, assuming differentiated roles that expand their learning potential; talented students with leadership potential get daily practice in leading mixed ability cooperative groups. And so goes the list in ways that are not possible when students are isolated from each other, uninterested in the tasks given them and bereft of a significant voice.

9. **Technology fits.** If a school has the technology tools available (laptops, internet access, printer, digital camera, mobile phones), students will receive ample opportunities to turn on these digital tools. In a PBL, they can learn how to conduct on-line research to gather information that informs comprehensive answers to their questions; they can browse for graphic organizers and other visual tools to organize information, make comparisons, sequence topics or set random connections within a concept map; they can design new products that spin from their innovative problem solving; they can create power points and digital videos, invent games and broadcast RSS feeds all with the intention of presenting their work to an audience at home or abroad. They can collaborate via SKYPE with fellow students in other classrooms, states and around the globe. In short, these digital natives, for whom technology is a natural extension of their minds and hearts (Prensky, 2001), can learn how to adapt their digital skills, expand their learning horizons and delve more deeply than ever into learning science for a lifetime as the first decade of New Millennium Learners.(OECD, 2008)

The MindQuest21tm Model

Elementary teachers of science can move readily into the type of instruction that results in strong student-based inquiry by learning the easy to adapt and flexible MindQuest21tm model. The MindQuest21tm model for project-based inquiry (PBI) was derived from a review of the best PBL practices found in the U.S. and other countries. The goal was to make PBL as simple to adopt as possible in any classroom, those with or without technology, lab equipment or a formal science curriculum. This lead to the design of a seven step model, a skeleton as it were, on which the flesh of individual PBI's could be built with any driving question about science concepts. This approach fit with the designer team's wanting to teach teachers to fish for a lifetime, not just for one meal.

MindQuest21tm is a PBL model adapted to PBI. It has seven essential elements intertwined with five crucial tools for preparing students to learn how-to learn in science.

1. **The seven essential elements**

    - **The advance organizer**. This is the time that teachers spend making sure that students are ready to learn in the PBI approach. It is the time for assessing back background knowledge, foreshadowing how they will respond to any gaps in what students need to know and to do in this unit and setting challenging expectations to think and problem solve.
    - **The driving question.** This is the essential question that students want to answer through their study work in the PBI unit. After they have learned how to ask this question so that it is authentic, open-ended and thought provoking, students are ready and likely to engage more deeply throughout the PBI in their investigation.
    - **Phase I: Gathering Information.** Teachers as the first source of information become the last resort resource in a PBI unit. Students learn how to ask guiding questions, conduct research studies, interview, survey and gather data from multiple sources. These methods match with a standard's expectation for students to "Collect data for investigations using scientific process skills including observing, estimating and measuring." (This example from Illinois Science Standard 11A)
    - **Phase II: Making Sense of Information.** The NGSS science standards focus on both process and knowledge. At each grade level, the largest number of standards focus on grade specific knowledge. However, smack in the middle of each grade' list of standards is an increasingly more complex standard that underscores the importance of inquiry and its sub-skills. Obviously, students will be

more likely to succeed in diving deeper into the math content if they know how to perform these inquiry skills with that content.

In this second phase, students focus on the information they have gathered in the first phase. To do this, they learn to make connections, draw conclusions and construct arguments for proof. At this phase, teachers can rely on well-established high-effects instructional strategies such as graphic organizers, planning templates, and structured questions so that students understand how the first phase details are combined and how reasons spring from logic.

- **Phase III: Communicating New Ideas.** One of the easiest strategies PBL veteran teachers adopt to engage their students in PBL inquiry and problem solving is the designing and making of an end product and the presentation.

In PBI, the *products* range from power points, digital movies, poster boards, role plays, web-sites and digital books to the more conventional essays, robot models and the like. These allow the students to communicate their new understandings or new discoveries. In addition, the MindQuest21tm model allows teachers to blend the creative problem solving elements of the design PBL as students transfer findings gained in their investigations into innovative prototype inventions which students display, demonstrate and explain to a gathered audience or develop marketing campaigns to sell the product.

The *presentation* element is an essential, culminating element for a PBI. It is the final piece used to deepen student understanding by helping students learn how to communicate their ideas to an audience. The presentation automatically adds an interdisciplinary

thrust to the science project by integrating the English Language Arts Speaking and Listening Standards and well as the ISTE Technology standards with the Next Gen Science Standards. All through the elementary grades, the students show and tell what and how they learned and convince audiences the value of their project's product. Examples from Reilly School include :

- Pre-K students built and marketed their simple machines.
- In the first grade, the students ended with a grocery store to sell products from their school yard garden. Parents came to purchase the goods.
- Third grade students researched, built and demonstrated simple weather measuring machines.
- Seventh grade students revised the school menu, served a new meal for lunch to all in the cafeteria and answered their parents' questions about nutrition.

Other school examples include :

- Secondary developmentally disabled teens grew vegetables at their residential school's farm and sold them to the public at their own roadside food stand.
- Fifth grade students from five classrooms collaborated to create a history of their town museum which they set up in the Lincoln Elementary School library
- Fifth grade students from four classrooms studied the indigenous people in their parents' home countries and created displays showing how those cultures impacted their own lives in America.

- **Assessment.** From beginning to end of a project, teachers provide multiple rubrics and checklists as self-formative assessments. Teachers select the rubrics which will most empower students to think about their learning and thinking. As identified in the Mind Quest21 template, teachers have options to use guiding rubrics that assess student development of content understanding, 21st Century Skills and the project work they are learning to do. These guiding rubrics can appear in each phase as they contribute to the students' standards-aligned development in these areas. In addition, teachers can extend these guiding assessments into a summative assessment for grading at the end of the unit.

- **Class Reflection.** On the day following the last presentation, the teacher guides the entire class through a reflection about the unit. Students voice feedback to the teacher regarding what they liked or didn't like, summarize what they learned about the science content and the inquiry method, and identify ways they could improve their understandings, skills and work habits in future PBI units.

2. Five crucial tools for learning-how-to learn

Students take charge and self direct their own learning-by-learning how to use learning tactics and strategies which contribute to their deeper understanding of each science unit's project. These skills are highlighted in each project so that students can scaffold their skill development over time. In each PBI science unit, teachers mix and match appropriate learning-to-learn tactics which students need for accomplishing the individual PBI goals.

- **Question Asking**. In addition, to the *driving* question, each PBI unit should contain *guiding* questions to help PBI students research the selected topics. Novice PBI students benefit from teacher created questions; PBI veterans prepare students to create and ask their own questions.

- **Thinking and Problem Solving.** Thinking, both inside the box (critical) and outside the box (creative) are the bricks and mortar for problem solving. (OECD, 2008) The inquiry standard clues the key thinking skills for a unit. Teachers learn to check that students have a mental menu for the specific type of thinking announced in the standard's verb (E.g. solve, differentiate, prove). (Bellanca, Fogarty, Pete, 2012) so that they are sure to teach the target skill as well as the content.

- **Collaboration**. The heart and soul of MindQuest21's scientific teamwork is the tell tale process of project based learning. Some ask, "Why not let students' work alone?". The first answer: "In the lab, scientific research is collaborative". The second answer: "The high effects research says 'Collaboration will bring the best learning results.'" (Marzano Research Lab, 2013)

- **Communication.** This list of five skills parallels the 21st Century Skills, the 4Cs list advocated by the Partnership for 21st Century Skills. More than three dozen academic, business and government surveys have identified the importance of these skills in the 21st Century workplace. (Bellanca and Brandt, 2011)

- **Creativity and Innovation.** Although the Common Core short changed these two skill sets, MindQuest 21tm includes their development so that students are transferring the other skills across the curriculum and into life situations. Specific "outside the box" skills such as generating alternatives, forming hypotheses, predicting and estimating are included especially in the third phase.

- **Digital.** From a Deeper Learning-21st Century Skills perspective, the Common Core Standards are incomplete. The Common Core committee shortchanged the importance of digital skills for those who are entering the 21st Century workplace. However, a walk-through of a science lab in academia or industry shows that technology tools are essential for scientists to do their work.

Science: Where Process Marries Content

Science outstrips all other academic disciplines in the elementary curriculum as a venue where the thinking and learning processes bind themselves forever with the content, the knowledge base of science. One doesn't exist without the other. In science, the process of inquiry dies without something, some content, come concept such as force or matter to investigate. Learning how to marry process and content is what scientists do every day. As they use their thinking and problem solving skills, scientists not only make discoveries and solve problems, but they learn from doing. This learn from doing is important not only with the inquiry projects that succeed; it is essential in those that don't.

Learning *From* Doing

Teachers subjected to no more than the theory or the research about how students learn science or handed a set of standards to review are like a computer programmer without a computer. Teachers rightfully ask for the "how to" that must accompany research and theory. As the seven essential elements from the Mindquest21tm skeleton show, it is important that today's teachers of elementary science know *how to* move beyond hands-on activities and replication of experiments in a lab book to a model of teaching and learning that plunges students to deeper understandings of what and how scientists work by showing how to apply their insights.

The template which follows was designed to enable teachers of elementary science students to build units which integrate the 4CS, technology and reflective assessments so that students can "learn *from* doing" in the deepest sense, rather than be stuck with asking students to read about science from books, asking a set of higher order questions about a lab experiment or simply *doing* science work and assuming that the learning will rub off.

The MindQuest21tm Science Template for Project Based Learning Design

PBI Unit Title

Purpose

Driving Question

Content Overview

Teacher Topic Resources

Grade Level

Power Standard: Next Generation Science Standards

Supporting Standards (CCSS, NETS)

Materials

Equipment

On-line Resources

- Science:
- Other:

Product(s)

Time-frame

The Unit

Setting the Stage

Content Expectations

Process Expectations

Initiating the Project Plan

1. The Collaborative Climate
2. The Driving Question
3. Phase I Gathering information
    - Topics and Methods for research
    - Products
    - Guiding Rubrics for formative assessment
        - Content
        - Process
        - Work

4. Phase II Making Sense
    - Tools to organize data and ideas
    - Products
    - Guiding Rubrics
        - ✦ Content
        - ✦ Process
        - ✦ Work

5. Phase III. Communicating the Results

Work plan/product

Work plan/presentation

Guiding Rubrics for formative assessment

Content

Process

Work

6. Summative Reflection

Content

Process

Work

- *This template available free with instructions at http:// www.ilc21.org/templates*

Going Forward

John Dewey's take on deeper learning targeted the dichotomy between deeper learning and surface learning. He targeted science as the discipline that needed to most attend to inquiry when he wrote "Scientific principles and laws do not lie on the surface of nature. They are hidden, and must be wrested from nature by an active and elaborate technique of inquiry."

In another thought, Dewey clarified the importance of "learning *from* doing". "We do not learn from experience," he said. "We learn from reflecting on experience." These words took him beyond Aristotle's "learn by doing" and set in motion the most direct pathway to deeper learning in science and other disciplines. He wanted to see students

engaged in the deepest kinds of learning which required that they have opportunities to reflect on the experiences that they were "doing" to learn.

Today's students, rich or poor, male or female, tall or short, are those who will be tomorrow's scientists and consumers in an increasingly technological world. They cannot continue to be held back by obsolete methods of teaching and learning science which are tied to prior century's emphasis on memory. Project-based learning, saturated with structured opportunities for students to reflect on what they are doing, on the rich and rapidly advancing content of science, and on how they are learning via critical thinking, creative problem solving , communication and collaboration, provides the best opportunity for students to learn and think as scientists preparing to live and work in a global society.

The tools to do this are ready for the taking. Of course, no one can say that PBL is an easy tool with which to teach. Nor is it a quick, superficial way to learn. As Dewey noted, inquiry is an elaborate learning technique. It requires the best of teaching and intense dedication to learning and learning how-to-learn. Now is the time to take up the challenges presented by sound and solid inquiry rich project-based learning. Now is the time to move science instruction into the hands and minds of all students.

*This article adapted from Science Alive! Deeper Learning in the 21st Century Classroom (*Bellanca, Bellanca and Koney. 2014) It is the first of three articles. Article two will present a sample unit of instruction constructed by teachers for use in their own classrooms. The Third will summarize the results of current studies to determine the effectiveness of the PBI approach for (a)changing teacher beliefs and methodology and (b) increasing student learning.

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EMPLOYMENT STATUS OF THE G. C. E. A/L SCHOOL LEAVERS: A STUDY OF BIOLOGICAL SCIENCE STREAM STUDENTS IN SELECTED PROVINCES OF SRI LANKA

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ABSTRACT

Sri Lanka has a high demand for knowledgeable manpower and it is important to study whether the present education system addresses this demand as suitable to the growing needs of the country. This study was thus focused on: (a) present status and employability of the G.C.E. Advanced Level (A/L) school leavers (biological science stream), (b) distribution of school leavers in different sectors of employment, (c) relevance of their employment to what they have learnt, and d) difficulties faced by the said stream school leavers in the job market. Four (04) Provinces in the country namely the Central, North Western, Northern and Eastern were covered under this research study. Data were collected from all 1AB schools leavers in the biological science stream in the 04 Provinces during the period from 2000 to 2004 using a pre-tested questionnaire followed by formal and informal interviews to get in-depth information on the subject. Out of the total population of 1500 school leavers (biological science stream), 508 (34%) responded, which were categorized into three viz., employed, unemployed, and those involved in higher education. Data were analyzed quantitatively (percentage wise and statistically) and also qualitatively by incorporating the evidences and comments received at the direct interviews. The study revealed that a majority (73%) of the respondents were from the low and middle income families. From the responded sample, 40% was employed,

24% was engaged in higher education and the rest of 36% was unemployed without having any post-secondary qualifications. There was a gap between the performances of students in the O/L and the A/L examinations while there was a relationship between number of attempts for A/L and the present status. Interestingly, the employment status was 100% for those who studied in English medium. A majority of the employed were involved in the medical and teaching related fields. Post-secondary qualifications, performance at the A/L (biology stream) and the English language skills had a positive relationship with the employment status.

Keywords: Biological sciences, G.C.E. A/L science stream, Employability of school leavers, Educational Reforms 1997,

Introduction

The concept of "Education for all" has been globally accepted as a principle. Likewise, the economic growth of a country, higher productivity, and the overall quality of life depend very much on education (SAARC, 1996). As observed by the Central Bank of Sri Lanka (2011), a high quality education system can lay the foundation to create a sound human capital base, which can effectively contribute to the sustained high economic growth in the context of a knowledge based economy. In this context, the education of school children at the G.C.E. Advanced Level is crucial because it serves a dual purpose. It is an attainment to qualify for a job as well as for the selection of admission to universities. In regard to higher education, the intense pressure on the limited number of places available in the universities and the State-run tertiary educational institutions is well acknowledged.

The mismatch of the G.C.E. (A/L) education and the university education has resulted in a situation of high level of unemployment and underemployment among the educated youth while accelerating the rate of unavailability of work opportunities. The children who belong to the families of educationally, socially and culturally disadvantaged and deprived are more vulnerable to be the victims of such unfortunate situations. Besides, there are institutional,

environmental and course curricular issues, which contribute to this kind of shortfalls in the education system. The present state of industrial development requires trainable persons rather than those with high educational qualifications. Therefore, the A/L school leavers who aspire for employment should be the target group, but they must be equipped with good general education, discipline, teamwork ability and innovative ideas along with good communication skills, preferably fluent in both the mother tongue and English language. Under these circumstances, there is a crucial need to adjust the education system in the country to develop the potentials of the school leavers to face the challenges in life and to improve the productivity and development of the country.

The successive Governments in the country have attempted to improve the school education system by introducing various reforms in the past few decades. Although the education reforms have resulted in some progress, they were not adequate to address the growing needs of the country's economy. The structure of the education system and the curriculum relevant to the G.C.E. (A/L) were changed under the Reforms introduced in 1997 by the recommendations of the Presidential Task Force. The main objectives of the 1997 Educational Reforms that were introduced to the general education sector was to promote access, equity and improve the quality of the education (Gunawardana, 2001).

Science and technology (S&T) play an integral part of this effort and therefore, the subject science has been introduced as a key subject in the national education system in schools from the primary to tertiary level of education. In the tertiary level, the students are allowed to follow science in two streams namely the biological science stream and the physical science stream. Biology began to emerge as a science since the seventeenth and eighteenth centuries (Englewood Cliffs, 1965), which aims at explaining the living world in terms of scientific principles (Stout, Talor & Green, 1990). Biological science stream touches a number of different fields such as medical, dental, veterinary, molecular biology, biotechnology, forestry, environmental science, agriculture, food and nutrition, fisheries, pharmacology,

health promotion, nursing, teaching and ayurvedic applications etc. Being an agricultural country, Sri Lanka has a big demand for manpower requirements in the biology related fields with rapid changes occurring in social, economic, political and technical aspects. An investigation of the employment status of the G.C.E. Advanced Level biological science stream school leavers therefore becomes important.

Literature survey

Education is accepted as a human right that has evolved throughout the history of mankind. The Constitution of the Government of Sri Lanka clearly identifies the eradication of illiteracy as a guiding principle of the State Policy. According to the National Education Commission (1997), the social, cultural and religious factors have played a vital role in the education process while Hemendez (1996) observed that education involves understanding of principles as well as the acquisition of skills and information.

The investment in education is an important key to the long term strategy of reducing poverty and improving income distribution in developing country (Jandhyala, 1994). After the Independence gained in 1948, Sri Lanka inherited a system of education, which was, however, inadequate and inappropriate for a free nation in many aspects and therefore left a large majority poor and unprivileged people, especially in the rural areas (SAARC, 1996). In the process of education, the schools have been established as formal institutions that help in determining what a child should learn and how well he or she is prepared to function in the society. Further, it is crucial for institution in helping the young to acquire systematic knowledge. The schools assure the transmission of knowledge and value of human generation (MEHEGTZ project, MOE, 2000). The Educational Reforms initiated by Dr. C. W. W. Kannangara created a national renaissance in education and the social justice and social efficiency were seen as the two important goals of equal educational opportunities (Jayatillake, 1994).

Nevertheless, the developing nations show that their investment in education had not yielded fruits because they had invested mostly in academic education but not sufficiently in vocational education. Therefore, the developing nations failed to make individual social mobility that resulted in unemployment since there is no balance between the academic and vocational education (Gunawardane, 1993). It is also noted that in the developing nations, only about 2 per cent of the youth in the age group 19-24 years gain admission to the universities when compared to around 6-8 per cent in most of the newly industrialized countries. But the figure for Sri Lanka is much lower than those of the most developing countries.

The limited access to higher education has also created disappointment and frustration among various sections of population in the country. Under the Educational Reforms of 1997, several changes were implemented in the G. C. E. (A/L) including project works; common general paper; 80% attendance for eligibility to sit the examination; university entrance based on z-score; three subject examination; and English medium instructions. These Reforms were first implemented beginning with the grade 12 in September 1998 and continuing to grade 13 in September 1999. The first G.C.E. Advanced Level examination under the said Reforms was held in August 2000 (Gunawardane, 2001). Hence it will be useful to study the employment status of the school leavers who sat for the said G.C.E. (A/L) examination in 2000 and afterwards. There are not many studies conducted in the direction of investigating the employability of G.C.E. (A/L) school leavers except for some statistics available in unpublished communications. Such data alone do not reflect information with special reference to biological science stream (personal communications). There were studies conducted on the employability of Sri Lankan S&T graduates that indicated the highest proportion of biological science graduates were employed in the government and semi-government sector (Ranathunga and Wickremasinghe, 2008).

Therefore, the general objective of this study was to find out the fate of the G.C.E. Advanced Level biological science stream (Bio-science

and Agricultural science) students who sat for the first A/L examination in the year 2000 (after implementing the Educational Reforms of 1997) to the year 2004. Considering the same group, the following specific objectives were also considered: (a) to find out the present status and employability of the G.C.E. A/L Biological science stream students, (b) to determine the distribution of GCE A/L school leavers in different sectors of employments, (c) to study the relevance of their employment to what they have learnt, (d) to find out the difficulties faced by school leavers in the job market and finally, (e) to make recommendations to overcome the difficulties faced by them.

Materials and Method

In Sri Lanka, there are about 560 schools with the G.C.E. Advanced Level science stream, which are categorized as 1AB schools. Since the education process influences the job searching behavior, the tracer study method (follow up study) was employed. Out of nine (9) Provinces in the country, four (4) Provinces namely, Central Province, North Western Province, Northern, and Eastern Province were selected for the study covering a vast area that represented different levels of education, which also get minimum z-score values required for the university admission. Since all G.C.E. (A/L) school leavers pass out only from 1AB schools, the school-wise deviations were ignored. The data were collected from students who sat for the A/L examination in biological science stream during the five year period from 2000 to 2004 (year 2000 being the first batch to sit for the G.C.E. (A/L) examination after introduction of the Educational Reforms of 1997).

The major instrument used for collecting information from the biological science stream school leavers was a designed questionnaire prepared in all three media Sinhala, Tamil and English which was structured to obtain descriptive information such as personal, educational, professional, employment status plus views on the Educational Reforms of 1997. A pilot study was conducted initially using a draft questionnaire to avoid ambiguities, difficulties in understanding the questions and answers and also to identify the information gaps.

The finalized questionnaire was distributed either by post or by hand. The number of questionnaires distributed was in proportion to the number of students in the 1AB schools in the particular district. Some of the institutions to which these school leavers found to be attached were universities, technical colleges, government institutions, colleges of education, medical and clinical laboratories, nursing schools, hotel schools, banks, IT centres, foreign organizations, private companies, vocational training centers, NGOs, business enterprises, private tuition classes, private companies, etc. A representative sample was managed to some extent by collecting information from school leavers who studied in different school types (*i.e.* girls', boys', mixed schools in urban, semi urban and rural schools). The sample represented each district in the selected provinces. The number of questionnaires distributed was proportionate to the number of 1AB schools in a particular district (Table 1).

Table 1 – Number of questionnaires distributed in selected provinces :

Province	District	No. of 1AB schools	No. of questionnaires
Central	Kandy	43	300
	Nuwara-eliya	15	100
	Matale	15	100
North Western	Kurunegala	44	350
	Puttalam	23	150
Northern	Kilinochchi	06	20
	Jaffna	39	130
	Mannar	08	30
	Vauniya	04	10
	Mullativu	05	20
Eastern	Batticoloa	18	60
	Ampara	23	80
	Trincomalee	55	150
Total	**13**	**248**	**1500**

Both qualitative and quantitative primary data were collected under this study. Formal and Informal interviews were followed up to get in -depth information and also to fill the gaps appeared in information provided in the completed questionnaires. The secondary data were collected from the books, research publications, circulars etc.

Data analysis was done by adopting usual methods of categorization, cross tabulating, percentages and combining the evidences received from interviews etc. Then, further analysis was continued using formal statistical methods such as Pearson correlation and chi-square test to check whether there was any relationships existed in the categorical variables.

Results and Discussion

Out of the 1500 questionnaires distributed in the 4 provinces, 508 (34.8%) school leavers responded, which was considered as the responded sample (Central Province-196; North Western Province – 217; Both Northern and Eastern provinces - 95). The group represented each district in the 4 selected provinces. The highest response rate was received from the North Western Province (42.7%) followed by the Central Province (38.5%) and the lowest response rate was received from the Northern and the Eastern Provinces (18.7%). The responded sample was further categorized based on their family income levels and their present status (Figure 1) and the financial situation of the respondents was decided by considering the occupation level of their parents and the evidences obtained at the informal interviews.

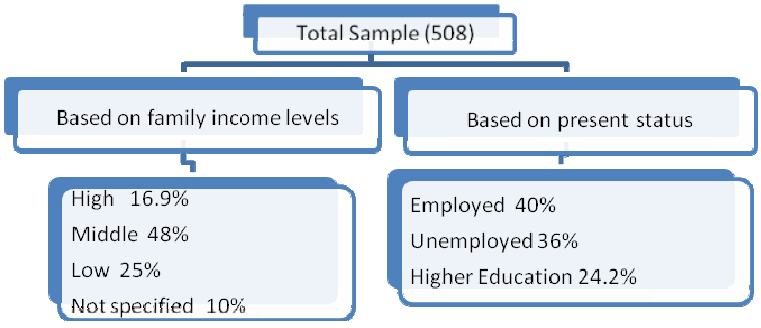

Figure 1- Categorization of the whole sample

As shown in Figure 1, the total sample was further analyzed under three categories viz, employed; unemployed; and engaged in higher education. The students in the considered sample had followed courses in any of the three media; Sinhala, Tamil and English while attending to the Government, semi government and private schools. Out of the total sample, about 36% individuals were unemployed. Of the unemployed school leavers, 62.3% (not shown in the figure) was inactive without engaging in any educational or professional activities after sitting for the G.C.E. (A/L) examination.

Present status of the studied sample

The responded sample comprised all three categories viz., employed, unemployed and engaged in higher education. A higher proportion of (73%) school leavers of biological science stream were from the low and middle class families indicating the interest among them in science education. According to an assistant Director (science education) in the Central Province, this progress took place as a result of Dr. Kannangara Educational Reforms in the national educational system and the unique welfare services offered for free and compulsory education in Sri Lanka (Interview,12/10/2006). However, the family income levels of school leavers seem to be associated with their present status especially to perform well at the G.C.E. (A/L) examination. During direct interviews, many school leavers in the employed and unemployed categories mentioned that they could not afford to go to individual or group private tuition classes that give close attention to the students (interviews, 2-11/ 11/ 2006).

(i) Job category

Table 2 given below shows the various job categories that the biological science school leavers were involved during the period of study. Interestingly, nearly 70% of them were involved in jobs related to medical and teaching that are directly or indirectly relevant to biological science field while a few in Information Technology fields (4.5%).

Table 2- Different job categories of the employed biological science stream school leavers

No.	Employment categories	%
1	Medical field (nursing, pharmacy, MLT, medical dealers)	29.8
2	Teaching / tutoring / instructing	29.2
3	Technical/laboratory fields	10.4
4	Management and supervision	6.9
5	Industries (production, chemical, garment, etc.)	6.0
6	Banking and accounting	3.9
7	IT fields	4.5
8	Others Security and business	3.5
9	Clerical	2.4
10	Not specified	1.1
	Total	**~ 100**

(ii) Job opportunities

During the interviews with relevant parties, a trainee nurse said that she selected the biological science stream with the purpose of having a job without much trouble in future. She believed that more opportunities in the job market relevant to biological science stream are available compared to physical science stream (Interview, 14/10/2006). During an interview, the Head of a training school of nurses, Kurunegala stated that annually a large number of A/L biological science school leavers are recruited as trainees. The general pass (S) grade for all three subjects is considered as the minimum qualification for this training program and in particular, the female students have a great interest in the field of nursing (Interview, 22/10/2006).

(iii) Job waiting time for biological science school leavers

The percentages of individuals and the job waiting time are shown in the Figure 2. About 38% (22% + 16%) of the unemployed have been waiting for jobs for two-three years; while 15% of the unemployed were expecting a job for more than four years.

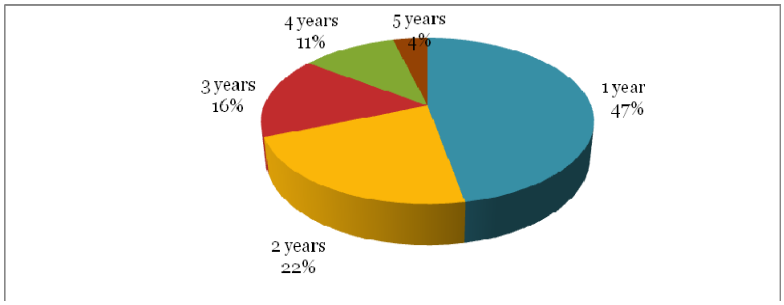

Figure 2- Waiting time for securing a job by unemployed school leavers in biology stream

(iv) Usefulness of knowledge gained through biological science related subjects

A high proportion of all three categories of school leavers mentioned that the knowledge and skills gained in the advanced level biological science stream were helpful to them in issues relevant to environment, health, nutrition, etc., and whatever the task they were engaged at present (Figure 3). An unemployed graduate told that even though he was not employed yet, the knowledge of biological science was very useful in their day today activities (Interview, 13/06/2006).

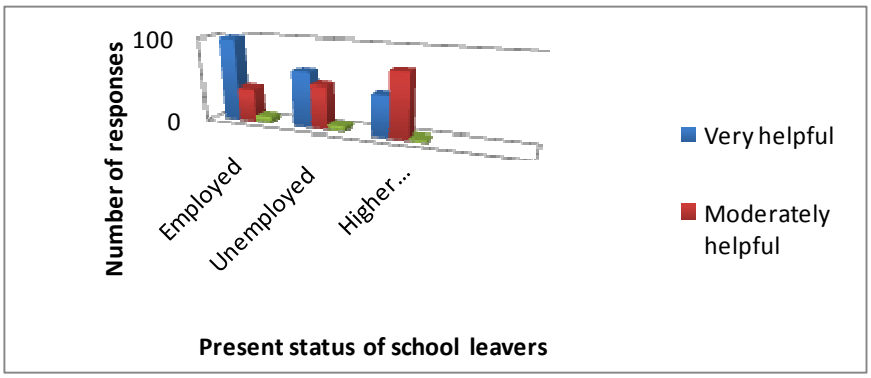

Figure 3: Views regarding usefulness of knowledge gained in biological sciences

(v) Gender factor

The gender factor is an important parameter in the employment status. The unemployment rates for males and female in 1990 were 11.1 and 23.4 percent respectively and the corresponding rates in 2002 were 6.6 and 12.9 percent as observed by Nanayakkara (2004). Also, the unemployment rate for females was more than double the rate of males throughout the period. Thus, this study was also focused to find out whether there was a similar picture in the studied sample. The analysis that showed there is no relationship between the gender and the employment status ($p > 0.05$) of the school leavers. Besides, a majority of the sample (80%) had indicated that any influencing factors associated with the gender discrimination have no strong impact on the present job market or in higher education avenues relevant to the biological science field.

(vi) Performance at various attempts in sitting for G.C.E. A/L examination

The sample was further analyzed to see the performance of biological science stream students at various attempts in the G.C.E. A/L examination (Figure 4).

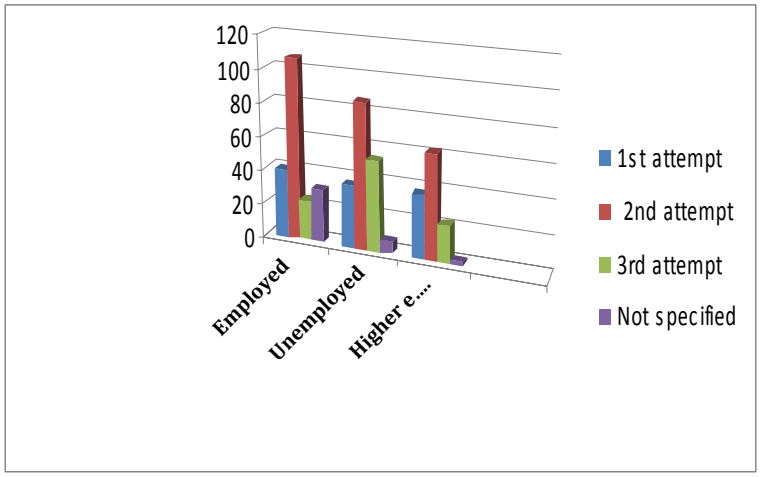

Figure 4: Performance *vs* number of attempts sitting at the examination

About 50% of all three categories were able to obtain better results in the second attempt. It was revealed during the interviews that most of the students get complete readiness with confidence for the A/L examination after the 1st attempt to face the examination successfully (for example, these influential factors are good knowledge, positive attitude, skills and training). The most noted observation provided in the questionnaire and during the interviews for failure at the first attempt was that students get fed up with schooling and attending to tuition classes after school and during weekends. Many students revealed at the interviews that they were mentally stressed in regards to the A/L examination (interviews on 17-19/ 11/ 2006). Besides, it was noted that students should have proper understanding about the job market and the trends before selecting the subject stream for the G.C.E. A/L class (interviews on 19/11/2006).

(vii) School leaver's views on Educational Reforms in 1997

Interestingly, the various approaches introduced through the Educational Reforms of 1997 (Table 3) were positively evaluated (very useful and useful) by many respondent biological science school leavers of all categories.

Table 3- Common views regarding the National Educational Reforms of 1997

Reforms	Very useful	Useful	Not useful	Not mentioned
Reduction of subjects from 4-3	177	203	92	36
Common General Paper	193	218	73	24
GIT	327	133	21	27
General English Paper	320	143	22	23
Practical Works	299	144	39	26
School Based Assessment	146	227	101	34
80 % attendance	153	218	112	25
Project work	120	230	129	29
English medium instruction	264	162	52	30
Z-Score	137	177	150	44

As observed by an Education Administrator, the reducing of the content of subject matter in biology would further facilitate students to manage time when preparing for the G.C.E. A/L examination and he also emphasized that it should be the same with other subjects as well. A majority of the school leavers of the biological science stream was of the view that the common general paper was very useful (411 out of 508) because it will keep the students to be aware of general information and currently important issues, in addition to the subject matter. But they were of the view that the contents of the common general paper should be carefully reviewed.

Many stakeholders *viz.,* teachers, parents, employers etc., also appreciated (interviews, 13-23/10/2006) that introduction of the common general paper will not restrict the knowledge of students only to the subject matter

(viii) School leavers views regarding unemployment and underemployment

Higher percentages of unemployed category indicated that poor performance at A/L, poor knowledge in English (speaking and writing), lack of work experience and lack of sound knowledge in Information Technology were the reasons for their unemployment situation.

(ix) Higher Education Category

Out of the total, 24.2% respondents in the studied sample were engaged in higher education and of this, 26.2% were females while 20.3% were males. This indicates a higher population of females in the biological science stream was engaged in higher education in comparison to that of males. Of the total involved in the higher education, 53% of students belonged to the parents who were in the government service. According to the test statistics and as mentioned elsewhere, unlike in the employed and unemployed categories, there is a slight positive correlation between performances of A/L biology stream and the O/L key subjects (science and mathematics) in the case of higher education category. Many undergraduates of the biological science stream in the Faculty of Science, University of

Peradeniya mentioned that after passing the Grade Five Scholarship Examination, they were able to get admission to the reputed schools in the area, which had a lot of facilities and that helped them to score well at the G.C.E. O/L and A/L examinations. As a result they were able to end up with the university education (interview, 11/09/2000).

(x) Future Prospects of the responded sample as a whole

The highest portion (93%) of the employed category was expecting to attain a higher position in their present job and a considerable number of this category was interested in doing higher studies after some time. A majority of the unemployed category (84%) wanted to be employed as soon as possible, and they did not mind what the job field as long as it has future career prospects. However, many females preferred either teaching or nursing since they will be able to apply what they learned in biology in to practice. Seventy two per cent (72%) of higher education category expected an employment opportunity in their study fields while the rest (28%) was prepared to move in to other related fields.

Conclusion and Suggestions

The study was conducted to find out the status of employment and the present status of the G.C.E. A/L. school leavers (biological science stream). The objectives were further extended to find out the relationship between the A/L biological science students towards employment, to identify the difficulties in the job market and to make suggestions to overcome those difficulties. The above results of the questionnaire survey and other findings obtained through direct interviews with stakeholders were carefully analyzed to arrive at the following conclusions.

- Majority of respondents were belonged to the middle and low income families. This indicates the growing interest among the ordinary population in engaging in science education.
- There was not much of a difference between the male and female biological science school leavers in obtaining jobs or engaging in the higher studies

- There is a gap between the performances at G.C.E. O/L in science and mathematics and the A/L examination (biological science stream) except in the category of those involved in higher education.
- A majority of unemployed category had been waiting to obtain a job for more than two years showing the wastage of skilled manpower contribution to country's economy due to the mismatch in the demand and supply of the job market.
- The knowledge and skills obtained by the students of A/L biological science stream positively influence in job seeking, higher studies and day today activities.
- The employed category was more appreciative of the government jobs due to freedom, and job security than the salary amount and the job positions.
- The present generation of school leavers is well aware of the demand for competency in English language and skills in IT in the job market as per the global trends.
- The employability of school leavers who followed the English medium instructions was considerably higher than those who followed in the Sinhala and Tamil medium instructions.

Recommendations

The school is an institution to which children join and leave after about 13 years of education and training. General education spectrum in schools prepares students towards higher education institutions such as universities, colleges, and other professional institutions. According to this study, the unemployment proportion of school leavers in general was high. Therefore, employment linked vocational courses should be introduced at school level after sitting for the G.C.E. O/L examination until the results are released. A minimum of three month programme to end up with a final report would be appropriate, which can replace the A/L schools projects since the A/L schools project is usually considered as an extra burden during the A/L study

period. It is timely that a national policy is drawn up to implement a well-balanced and properly planned G.C.E. A/L curriculum in schools that provides an effective preparation of students towards the current job market. A mechanism should be geared to link the students from schools to other institutions so as to increase the employability. Such an attempt will reduce the mismatch between demand and supply of the skilled man power at school leavers' level. It will also provide an alternative for those A/L school leavers who follow the post-secondary courses without any guidance or purpose. The followings are the other important suggestions arisen from the study based on interviews with various stakeholders.

General suggestions

- Policy level adjustments need to be done to minimize the gap between the G.C.E. O/L and the G.C.E. A/L examinations. In this connection, an aptitude test for admission to A /L science stream is recommended.
- Establishment of district-wise A/L science schools with very good standard is proposed so that the students can get admission through the proposed aptitude test.
- English medium teaching and learning process may be promoted in the rural and semi urban areas as well, by offering necessary physical and human resources.
- Regular human resource development programmes at the level of G.C E. A/L should be worked out throughout the country.

Suggestions specific to biological science stream:

- More effective Teaching & Learning methods in biological science stream should be implemented through introducing various training programmes with field visits.
- It is necessary to increase more avenues for job opportunities in fields such as agriculture, technology, research and development, biotechnology etc., since most of the employed school leavers in biological science stream were engaged in medical or teaching fields.

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NON-FORMAL EDUCATION: STRATEGY TO FACE MODERN DAY DEVELOPMENT CHALLENGES

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Origins of the Concept of Non-formal Education

Non-formal education as a discipline is of recent origin, which emerged especially during the War II. The purpose of this new strategy was to provide assistance to those in war affected areas to be literate. These activities were not specifically known as NFE but education programmes for adults outside the formal school. The term NFE itself originated in Africa as a result of a workshop organized by UNESCO in the 1960s. The term NFE is self explanatory to indicate that it was not to be similar to 'education provided in the formal schools'. Thus, the key characteristics of NFE at the time of its origin were exclusively related to literacy since it was the critical need of the day.

There were several key characteristics of NFE at the time of its origin. They had the flexibility to adjust to any clientele irrespective of age. No rigidity in terms of commencement, cessation and duration of learning and learning could be performed at any time of the day, morning, evening or night, to suit the convenience of the participants. No set time tables to use as in formal schools. Learning-teaching contents were related to the needs of the participants. The venue of learning was any conveniently located place in the village. Participation was made voluntary and participants could drop in or dropout at his/ her convenience. Evaluation was purely verbal without any formal record keeping. Although these characteristics were of the order at the initial phases of NFE, universally, these seem to be more formalized today due to commercialization and complexities of the needs of the clientele. Nevertheless, NFE consisted of planned teaching learning modules/ lessons/ activities and processes all leading to a set goal of achieving skills in literacy. These lessons were more related to daily needs and issues.

Some view that the term NFE is not very appropriate since it gives a negative perception/ feeling/ understanding of learning. In translating the term to local languages the concept/ meaning may still be confused and misunderstood. However, in the developing world where the level of literacy is low the concept mainly relates to literacy, knowing the 3 Rs – reading, writing and arithmetic.

Overtime Changes in the conceptual frame work

Currently, the concept has evolved a wide connotation and covers many disciplines and activities. In fact, NFE seems to be an important vehicle of getting information and developing skills to all those who have no access to formal means in many fields which are provided in formal settings highly compartmentalised. The information explosion during the last few decades has increased the need for NFE approaches to keep abreast of the sea of multi-disciplinary knowledge and information. Thus in the developed world NFE is an important source of information provided through media and technology. The elders seem to be the major participants in these programmes who, irrespective of age and sex, are keen to seek knowledge and develop skills throughout their life in relation to their changing needs. Thus NFE has become a close ally of lifelong education as well.

NFE though not organized like the FE, follows a set pattern with clear objectives and targets. It is more flexible than FE but, as you will see, more organized than Informal Education (IE). Although NFE is more associated with literacy programmes of the developing countries, it addresses to many development needs of the communities, especially in connection with activities of the NGOs.

NFE and Informal Education (IE) / Learning

In this section other concepts connected with NFE are discussed in order to provide the NFE MTs (Master Trainers) the similarities and differences in structures and other elements. These include informal education (IE), formal education and lifelong education.

Informal education (IE) is yet another term that is used commonly along with FE and NFE. What does it mean? Unlike the other forms, IE has the longest history and is the most ancient form of learning. It dates back to the origin of the human being. IE is part of the natural process of learning. Teaching and learning together had been a part of life and that is how humans progressed throughout the ages. It was a learning process through guidance, observation, imitation, repetition, trial and error and success and failure. In the modern days IE takes place all over, through media. By definition IE, is a process that everyone learns from another informally which takes place anytime, anywhere and from any source. It is the most ill defined form of learning and does not lead any one to a common set of goals . The learning depends on a person's desires and objectives and the amount learnt will vary with the capacity of the individual. In fact, IE is the most common form of learning seen today and it influences most of learning situations due to the impact of media.

NFE and Development Trends- Macro picture and its role in the modern day

The development trends relate to globalisation, world as a village, exploitation of resources, issues connected with environment and pollution, increasing illiteracy and population and many more related issues specifically in relation to poverty alleviation programmes in the developing world. In the process of development it is seen that rich nations become richer while the poor are forced to circumvent to living in ghettoes with decreasing and reduced quality in life. The international community's emphasis the significance of literacy as a basis for improvement in quality of life and co-relates social indicators to levels of literacy. Illiteracy breeds ignorance, subjected to exploitation and humiliation.

Out of a total of illiterate one billion in the world of which 90 per cent live in the developing world illiterate numbers are still increasing. This is due to the increase in poverty. It is seen that one way to attract the non-schooling population to schools is to develop mechanisms

that will help the family economy and motivate the children to learn at their will and pleasure. The FE is structured in such a way that there is no room for flexibility in terms of participation. These acts as a barrier to many of those children who are 'economic' supporters of the family and in these girls suffer the most. NFE been a flexible outfit could be used to accommodate the needs of those children who have to be the family bread winner supporting at early stages in their life. NFE materials could be developed to take care of their needs as well. In the modern world, literacy is essential for survival to gather information and latest knowledge in relation to day–to-day requirements for the improvement of quality of life. NFE would be a key vehicle in this regard.

Mega Trends in NFE

This aspect has been touched briefly earlier. At the early stages the focus of NFE had been more on literacy. Even to date, in countries where the literacy level is low NFE is invariably associated with literacy movements. NFE is a strong supporter of FE .It is also seen that NFE clientele includes persons of all ages, both male and female. Combining literacy with life skills has been a new trend to encourage the beneficiaries to participate and stay long in the programme. NFE has also been used to provide latest information and knowledge about the aspects that affect the people daily in relation to health, environment, pollution, agricultural activities, new concepts on human rights, conflicts, and other social and political issues. Thus NFE has moved from its pure literacy approach, at the beginning, to educate masses on many and varied subjects that affect them in their day to day life. NFE is an easy way to change the life styles of the community. It is also cost friendly and learner friendly. NFE is flexible and adaptable to any situation and any environment much easily than the formal systems.

NFE and FE Linkages

This is an important aspect for trainers to know that NFE is not isolated from FE. In fact two concepts have blended adding strength to each other. There is no quarrel between these two approaches to

learning and these complement very remarkably in all the fields. The trainers should understand these realities and more the methodological and structural differences between these concepts.

UNESCO had been very particular in its attempts to bring about the linkage between these two concepts. Various workshops were organized and documents developed in relation to the nature of bridging the two areas. Some have remained theoretical but practical approaches of a pragmatic nature have also emerged over the years. The methods of collaboration could be summarized as below.

(a) Use of FE materials at the primary level for NFE programmes.

(b) Use / adapt tests of FE for NFE students for comparability.

(c) FE activities to incorporate NFE programmes as parts of extra curriculum work.

(d) NFE students to be absorbed into formal schools at various levels.

(e) FE teachers to be trained and provided skills in NFE methods and assist in NFE programs.

(f) Upgrading in subject matter / academic areas of NFE teachers to be in par with FE teachers, in quality and knowledge.

Emergence of the Concept and its Introduction to Educational Discourse

Growing Frustrations

➜ With unsuitable curriculum and the mismatch between education and economic growth there was a growing world educational crisis in the 1960s. As a result, jobs in the market were unrelated to education out puts, causing a mismatch between education and social demands. There was also the natural tendency of slowness of FE to reflect socio- economic demands. Education invariably follows social trends and not *vice versa*.

In the late 1960s and in the early 1970s The World Bank was upbeat about the use of NFE as a means of development in the under privileged societies in relation to emergency needs. Although The WB had not referred to refugee contexts at that time, the concept was of relevance to the conditions in such scenarios as well.

- Relationships with other disciplines

The trainers should posses a wide understanding of NFE and its relationship with lifelong education (LLE), connections of NFE with learning society, and how it contributes to development issues (UNESCO- Learning To Be, 1972). Furthermore, the facilitator should be knowledgeable about the NFE literature and the key exponents of all forms of NFE and associated theories. The key writers and exponents such as Coombs, Ahmed, Prosser etc. and their materials should be part of the repertoire of the facilitators. All these will develop confidence amongst the NFE personnel and enrich them about what they do.

Definition

- Learning / training outside the formal system.
- It is a term difficult to define in one form since it lacks unanimity and the nebulosity nature with the term. No single frame point of reference could describe what takes place under the term NFE
- Some describe NFE as any educational activity organized outside the established formal system and designed to serve identifiable clientele and educational objectives (Khawaja and Brennam 1990)

Key Characteristics

- NFE is flexible and varies with issues and changes in relation to content / process / location / time / resources

The personal dealing with NFE should have the capacity to identify local level issues and how these are attended by the community. The organization, methods, acquisition of resources, implementation processes, and types of leaders etc. involved in a community activity would throw light on the nature of an NF development activity. Using an example of this nature would amplify the difficulty in defining the elements of a NF activity. But throw light on the nature of a NFE programme. In brief the following steps would provide guidelines that could be followed in the development of NFE programs.

Non- Formal Education

- Relevance to the needs of the disadvantaged.
- Concern with specific categories of persons.
- Focus on clearly defined purposes.
- Flexibility in organization and methods.
- Community groups and structures.

Formal Education

- Hierarchically structured.
- Chronologically graded –primary .to tertiary.
- Fulltime in operation and participation.
- Specialized programmes for professional and technical personnel.
- Institutional based programmes.

Informal Education

- It is a lifelong process
- Acquires knowledge from daily experiences
- Possess a variety of environmental resources – family, work place, library, mass media
- Provides a variety of educative influences
- The role of IFE in collaboration with other forms of learning becomes very powerful and effective in conveying messages

Chart 1: Contrasts between Formal and Non-Formal Education

(*possible collaborations between FE and NFE)

KEY ELEMENTS	FORMAL	NON - FORMAL
PURPOSES	Long term and general Credential based *condensed / catch up programmes	Short –term and specific Non-credential based * condensed/catch up programmes
TIMING	Long cycle Preparatory Fulltime	Short cycle Recurrent Part time
CONTENT	Standard Input centred Academic Entry requirements determine clientele * condensed courses/concept based approaches	Individualized Practical Clientele determined entry requirements *condensed courses/concept based approaches
DELIVERY SYSTEM	Institution based Isolated from the environment Rigidly structured Teacher centred Resource intensive*	Environment based Community related Flexible Learner centered Resource saving*
CONTROL	External Hierarchical	Self- governing Democratic
CLIENTELE GROUPS	Standard and age determined	Pr-school children School age children but out of school Adolescents Drop -outs Non-elite and deprived Second chance possibilities
NEED- BASED	Certificate oriented	Literacy plus life oriented
INSTRUCTIONAL MATERIALS	Mostly limited to a few standard texts / sources but generally available to all chidren	Varity of modes but dearth of training materials available
RESOURCES	Well developed resources such as materials, media	Limited budgets
PERSONNEL	Formally trained personnel available to a greater extent Uniformity in the provision of skills could be maintained	NFE limited and mostly depend on FE personnel – ad hoc
MANAGEMENT	Follow government procedures and uniform in application	Lacks backstopping support services Not consistent vary with organizations and funds
OWNERSHIP	Clear authority	Many stake holders
CLIENTELE GROUPS	Formal	Flexible / informal

One could add include - INFORMAL EDUCATION – its influences, role and functions

Key perspectives in integration of NFE with FE and IFE in relation to

(a) Setting

(b) Process

(c) System

Here integration refers to the collaboration of resources, both physical and human in relation to the operation of the activities. The location itself could be shared as for example the school or a natural setting for any activity. The processes will involve very formal approaches and include informal procedures as per field visits, meeting of people etc. The 'system' could be the methods applied to achieve the set objective in a project where both formal and non formal approaches could be applied.

Here too an activity could be organized by the MTs, where both formal and non formal approaches would be used, as one would see later under 'Participation'.

Clarifying types of possible FE / NFE connections - two types

1. Re-joining or re-entry to the formal school facilitating to join programs of FE programs or combining FE methods / materials along with NFE organizational procedures which are flexible, relaxed and relevant to those drop outs. These activities could be for lower age category of personnel.
2. Self development programs leading to improving quality of life and self employment. These activities could include skills development, literacy programs, business management etc. Such programs could be for higher age groups who look for immediate employment opportunities.

Learner inputs / Nature of the learner

Under this section (1) learner deprivations and related inputs, (2) learner behaviours and (3) learner expectations will be discussed. These contents were derived from the training programme referred to earlier and field activities that were associated with this workshop. The main objective of this section is to highlight NFE programmes from the learners/ clientele perspective. This helps the trainers to focus on the needs specific to the group and not use contents and methods that are alien to the environment. Such NFE programmes become effective and acceptable. Understanding the learner, his behaviour, expectations are vital components in this aspect which should be mandatory to NFE trainers. Hence the following pages will analyse the learners from these perspectives enabling the trainers to get insights into the specific methods that would be learner friendly, as well.

(1) Learner deprivations and related inputs Learner characteristics both of adult and child

1.0 - Refugee and socially and economically deprived groups.

2.0 - Types of deprivations.

3.0 - Nature of aspirations /obstacles to achieving their aspirations.

4.0 - Nature of the availability of resources etc.

Learner outcomes are depends on the following

Knowing the characteristics of deprivation of the learner is important to develop suitable mechanisms in relation to the understanding learning needs, teaching learning process, developing teaching learning materials, evaluations and follow up activities unlike in FE programmes. In the latter the approach is universal while in the NFE situations the processes should be both individual specific and friendly. The characteristics are partly the results of the nature of the deprivations of the clientele.

The following were some of the characteristics of the learners indicated by the group of trainees at the workshop conducted by

GTZ / Basic Education for Afghan Refugees (BEFARe), Pakistan (2004). Hence the significance of their validity and relevance.

(a) Lack of protection,

(b) Loss of the first opportunity to learn for the majority,

(c) Physically handicapped people are more disadvantaged/ deprived,

(d) Majority are unemployed,

(e) Lack of guardians/ families for most of them,

(f) Highly dependent than most others,

(g) Freedom of movement restricted to their environment/ camps,

(h) Alien feeling in the host country (in the case of refugees/ IDPs)/ rejected feeling in their own society,

(i) Commonalities with the host community in terms of religion, language, culture, marriage relationships, historical factors and place of birth for most youth (this factor limited to Afghan refugees only).

These factors of learner deprivation were further developed and classified under various headings for ease understanding and focus as given in Chart 3.

It is here that the story of an old refugee male who was a participant at the NFE program of GTZ/ BEFARe in July 2004 becomes very relevant. The participant was Abdul Rahim from Akora Khattak Afghan refugee camp in Peshawar, Pakistan (see box).

> 'Although I am 65 years of age' Rahaman confessed, 'I come to the class for the benefit of my grand children and also to show the refugees that one can learn at any age if he has the will. My attendance has encouraged many young ones to attend NFE programs. The literacy program helps me to assist my grand children at home since their parents are illiterate and they have no time to learn or help their children while they perpetually struggle to meet the minimum family economic needs. Education is opening my eyes which were closed for 65 years!'

Expected Results of NFE Programs

- Change of behaviour.
- Improving learning skills.
- Developing intellectual skills.
- Assisting economic development.
- Social development improvement.
- Long term change in social life /quality of life.
- Understanding the society better.
- Learning how to learn.

Future Needs- these may change according to needs and situations

- Peace education.
- Rehabilitation.
- Education on health aspects – HIV AIDS in particular.
- Fulfilment of basic needs.

What Trainers should know about the Learner

1. Learners background – refugee or deprived host.
2. Type of learner – adult or child male / female.
3. Characteristics of the learner.
4. Methods to teach the learner.

(2) Learner Behaviors

The importance of knowing the behaviour of the learners is important since these learners are of two main categories of age's *viz.* children / youth and adult learners. Knowing the learner is equally important in FE scenarios as well. But in NFE all the learners are of a deprived nature and they lack many of the facilities that children in FE enjoy. Hence, the trainers should understand the psycho-social needs, traumas and distresses of both children and adults. Their learning needs also differ from that of those who follow FE programmes.

Hence, additional empathy, love, affection, care and protection are the critical needs of the learners of NFE and especially so of children in refugee camps and deprived groups. For refugees the NFE centre is the only place of solace and security for most of their children.

Psychology

The trainers were guided to develop materials and methods taking care of the above characteristics of their clientele. They were made to understand the significance of these aspects to succeed in their teaching learning NFE programmes. Thus, androgogy and child psychology in the context of NFE programmes are significant. Unlike in FE where only child psychology was needed, in operational matters in NFE understanding of the child and the adult are equally important. This is the difficult task of the trainer since he has to switch from one group to another almost instantaneously, which makes the NFE tasks more difficult and challenging than the FE tasks.

The trainers guide the trainees in acquiring knowledge, changing attitudes and enhancing skills. Methods to be used in achieving the above include:

(a) Using these methods appropriately and readily acceptable to the learner;

(b) Using those methods that create an interest in the learner;

(c) Resorting to those methods appropriate to learner's skills; and

(d) Using those methods helpful to the learner to understand reality related of the situations

Source – Workshop for master trainers, GTZ / BEFARe, Pakistan, 2004

(3) Learner Expectations (LE)

This refers to what skills the learners would like to develop. These vary with the type of the learner which depends on the age level of the learner. Those young who had missed basic education in schools would prefer to develop their reading, writing and mathematics skills (3 Rs), while those at a higher age would prefer to develop competencies that would directly provide employable skills and or enhance their current competencies. This is unlike in FE where the

learning systems are mostly universal at lower levels while options prevail at secondary and levels beyond. This section will focus on these aspects specific to NFE where they expect to develop the following.

5.0 Literacy skills – 3 Rs;
6.0 Skills in gathering information;
7.0 Develop social skills;
8.0 Enhance skills leading to job opportunities - self employable type; and
9.0 Skills to improve practices currently engaged by the learners.

Thus NFE programmes should be developed to achieve these targets. These expectations are to be promoted, developed and better understood through a taxonomy which should be part of the repertoire developed by the MTs (Master Trainers).

Taxonomy of Expectations are as follows:

10.0 Knowledge increase in relation to 3 Rs;
11.0 Change of attitudes in relation to social relationships; and
12.0 Skills enhancement in relation to application of knowledge in life activities.

5.0 Teaching learning process for learner enhancement

This section will focus on processes that should be adopted for effective impact of learning. These included

1. Participation
2. Developing learning materials,
3. Action research approaches; and
4. Assessment procedures. These were the areas that were discussed and guidance provided at the workshop held for MTs. (Master Trainers)

Participation

One of the critical factors that distinguish NFE from FE is in relation to the nature of participation. In FE participation is at its minimum at most levels- classroom, teacher, student and at the level of training of professionals. It is still more teacher dominated. The strength of NFE lies in its participatory qualities.

6.2 Chart 2: Characteristics of Participatory Learning

Principles involved	Role of participants	Role of facilitator	Skills developed
1. Sharing of responsibility - more than one involved	1. Collaborative work	1.Facilitation is to assist students in understanding concepts	1.Developing skills in problem solving on their own
2. Sharing and exchanging of ideas	2. Discussion leading to concrete action	2.Facilitator not tied to the book or theory but be creative and innovative	2.Social skills developed –communication, awareness/self sufficiency, self-confidence
3. Emphasis on common task	3. Targetting positive results	3.Make facilitation interesting and challenging	3. Realisation of common good and saving time
4. Learn from one another/ peer learning	4. Cooperation enhanced	4.Widenining the knowledge horizon	4.Understanding the value of feed back / revision
5. Time budgeting	5. Spirit of healthy competition	5.Encouragment from facilitators	5.Develops time management skills
6. Value of team work	6.Identifying points of contact for collaborations	6.Planning and organization of assignments	6. Skills in collaboration for common goals
7.Importance of out put focused processes	7. Targeting to complete tasks	7.Employing a variety of facilitation methods	7. Develop the skills of identifying appropriate methods to suit the activity, resources.
8.Select appropriate tasks	8. Collaborate to select the most rewarding	8.Guiding them to respect all tasks equally	8. Skills in identifying relevant tasks.
9.Use ideas for mutual understanding	9. Deliberating to identify the best	9. Promote / guide for such deliberations	9. Collaboration of ideas for mutual benefit.
10 Everyone is assigned responsibility	10. Individuals to be committed	10. Detailing tasks suitably	10. capacity to shoulder responsibility and developing self-confidence
11.Importance of encouragement	11. Individual commitment to meet targets	11. Checking everyone has a responsibility	11. Significance of working together
12.Common task	12. Individual responsibility	12. Monitoring of progress	12. Supporting the above skills
13.Objective oriented tasks	13. Clarification of objectives and working to achieve	13. Assisting to clarify objectives	13. Knowing the significance of clear objectives for any given task in life

Source – Ekanayake S.B. - Workshop on NFE for Master Trainers at GTZ / BEFARe, Pakistan, 2004.

Action Research (AR)

Action Research (AR) is the other teacher input that was discussed. This is the other common method that could be used / adopted in teaching / learning involving participants actively.

The initial step was to discuss with the group of trainers about their understanding of the concept of AR. For them AR was: (a) finding out for one self; (b) investigation of an issue; (c) an active involvement of the participants; (d) an action that leads to finding out a solution to a problem/challenge; (e) clarify a doubt/idea; (f) clarification of a concept; and (g) develop a skill

This was followed by a discussion as to how the concept of AR be applied to T/L process in relation to subjects taught for NFE students. This should help to achieve the understanding of the 3 Rs and also lead to developing the objectives in relation to the educational objectives – Knowledge, Affective and Skills domains.

Action research activities of a simple type to be used for literacy programmes

As an initial step the trainers were encouraged to perform very preliminary and simple tasks as preludes to action research. They were asked to: (a) go to the garden; (b) listen to noises; and look at the leaves and flowers by getting very close to the plant type for about 10-15 minutes.

In the above three tasks, the participants were required to adopt AR methods and develop activities related to: (a) language lesson; (b) mathematics lesson; and (c) social studies for grades III and IV for NFE students.

Advantages of Action Research

AR helps to teach without specially made materials as the materials are in the environment. It is learning from reality and the learners understand the concepts better.

13.0 - Could teach / engage a large number more than in the traditional classes.

14.0 - Makes it lovely to learn being fun loving and friendly.

15.0 - Learn while doing.

16.0 - Disciplined while in action.

17.0 - Attitudes formed while in action.

Assessment Methods in NFE Programs

What is Assessment?

Participants viewed assessment as: (a) level of comprehension achieved in some topics / issues; (b) process of awareness creation; (c) how facts were found out (d) how out puts / results of immediate work and conclusions reached; and (e) how data are interpreted.

Assessment should help to know the extent of the knowledge transferred/understood by the recipient in relation to facts/concepts/ skills. It is important that the teachers transfer the maximum of the competencies to the students. Thus, the more the student receives/ understands out of what was taught, the greater the benefits accrued by him increasing his capacity to compete with others being able to understand and use the information better . The role of the teacher would be to provide the maximum of what he can and the assessment of that task is a useful tool to measure the level and extent of this transfer of knowledge/skills/concepts etc. Hence there is a paramount need to develop assessment tools carefully and scientifically to capture the quanta of improved knowledge, attitudes changed and skills enhanced. The task for the teacher in NFE is more difficult, since learning is non-formal. Assessments also have to be of a flexible nature capturing more of the changing behaviours. Unlike in FE, where certificates are more valued, the objectives in NFE are more related to development of social skills and life skills. It is expected that these will enhance the improvement of the quality of life of the participants. In a way, assessments in NFE are more important for the teachers / facilitators for them to know the extent of the success of their inputs, enabling them to take corrective steps in their NFE programmes.

Processes involved in assessment

Skills to be assessed are related to what is taught and identification of skills are related to key domains of educational objectives – knowledge / attitudes/skills

Example of knowledge improvement	–	Counting up to 10. Competency to count Understanding the value of each number Difference between numbers. Understanding the relationships among numbers.
Changes in attitudes	–	Numbers beyond 1 is higher than one. Respects for elders. Understanding of the values attached to different numbers in life situations.
Improvement of skills	–	Use of numbers in daily operations/life situations, in the market, post office etc.

These are skills to be evaluated though an assessment tool:

- ➜ Assessment in FE is more for certification
- ➜ Assessment in NFE more life oriented

Group Work on Assessment – what is it and Methods for NFE

I. What is it?

- ➜ Use of questionnaires for identification of behavioural changes.
- ➜ Using environment in teaching learning situations.
- ➜ Observation of competencies and talents in daily life.
- ➜ Assessing the methods of implementing knowledge in daily life situations.
- ➜ Determination of impact of rewards from learning/practical achievements.
- ➜ Interviewing elders in the community.
- ➜ Holding discussions with teachers about the participation of the elders in learning.

II. What assessment methods in NFE?

- ➔ Observing the behaviour and attitude of students outside the classroom while they are in school – for children only.
- ➔ Discussion with parents and other family members about the children- for elders / children.
- ➔ Determination of the capability of participants to use the knowledge in daily life situations.
- ➔ Teachers keeping a close eye on any change in the perception of students.
- ➔ Taking opinions of students about each other and noting remarks.
- ➔ Measurement of quality as well quantity aspects of the students.

NFE in the context of modern world of knowledge economy

Having looked into NFE at great length and analyzed its processes and implications it would be pertinent to see how NFE, FE interact in the modern day knowledge economies, how one supplements the other in globalized economies and learning societies. This may perhaps leave the reader to understand the learning in the New World Order, the strengths of each other to meet the challenges that are thrust on mankind.

NFE defined in the modern context suits admirably to learning that takes place today. Unlike the traditional institutionalized learning where structures, programs as well as beneficiaries are well defined and formalized using inbuilt mechanisms under NFE learning is 'fee for all' in nature where learning could take place anywhere without a centre. This flexibility is a result of (a) inability of the formal systems to cater to the demands of all stake holders (b) learning is so complex that one source cannot provide all opportunities through one source (c) learning is short term and midterm in nature unlike the formal system which is hierarchical and has a gestation period (d) the

demands of the market forces are subject to sudden changes due to the competitive nature of supply and demand which the formal system cannot keep pace.

All of the above have occurred during the last few decades more so due to globalization, nature of the changes of the environment due to sudden climatic catastrophes and warring nature of the human. One should also add the impact of scientific knowledge on the behavior patterns due to changes in cultural and consumption life styles. Thus they cannot wait for formal learning systems to provide answers and solutions and the need for quick fixes which mostly NFE could provide answers.

This does not mean that traditional learning institutions which has stood the test of academic patience and looking at depth for solutions which last for centuries has lost their interest while values and philosophical debates are far from it. Some of the modern day solutions in the fields of science, medicine and social thinking have roots into centuries old formulas and practices. Today, in all, one could surmise that learning has taken different turns and twists especially with the modern day IT facilities and electronic learning devices the element of the mixtures of learning from NFE and FE has grown into new dimensions so much so that one cannot say where NFE begins and ends.

6.3 Chart 1: Assessment Procedure - A New Vision

I	II	III	IV	V	VI
Skills Educational. objectives . Domains Knowledge. Affective. Skills	Why needed	How provided	Activities planned	Materials needed	Testing procedures 1 2 3 4 5 Verbal / written / practicals / obser / contexts Grading

Conclusion

Impact of NFE programs on social contexts

The ultimate objective of NFE is to raise the standard of living and improve the quality of life of the beneficiaries. Unlike in FE the participants do not expect to seek employment and or be absorbed into a formal job in an institution. However, some of them may be able to use the skills to seek better prospects. But, that is not the sole outcome desired. Non-formal education is expected to : (a) change the behaviour; (b) expose them to new avenues for improvement of their daily life; (c) make them participate in civic life of the community; (d) understand their rights and duties; (e) provide opportunities for their children to enjoy and benefit from services for which they did not have opportunities due to ignorance and lack of opportunities; and (f) expose the beneficiaries to a whole array of moving from a status of dependency to a level of self confidence in the use of state services for the betterment of the family; and the community at large. Hence, in evaluation of the impact of NFE programmes, one has to be mindful of these elements. Otherwise one may miss the woods for the forest.

Under such circumstances, the trainers not only should evaluate the performance of the participants in their learning programmes conducted in the NFE centres, but also how they have improved themselves socially in the community. What improvements could be seen in his social development aspects? What are positive the contributions he has made to the community as a result of his participation in NFE programmes? How has he been able to understand the responsibilities in the family? Thus, evaluations should be done in social contexts as well. The trainers should be mindful of this and formulate suitable instruments to capture the changes one has brought about in himself and also in the community. Thus NFE is directly more development oriented and productive focused, providing immediate impact on the clientele and the community than FE. This is the most striking character in NFE programmes where the potential to change is articulate, providing

immediate solace to the beneficiaries. Unlike in FE where change is slow and impact on QOL is far flung and diffused, on the other hand, NFE brings results immediately in relation to learning, earning.

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Biographical note

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රැකියා තෘප්තිය: ගුරු ඇසින්

ප්‍රියානි පණ්ඩිතරත්න
මහ/පේරාදෙණිය මධ්‍ය මහා විද්‍යාලය,
පේරාදෙණිය.

ආචාර්ය සුහාෂිණී විජේසුන්දර
අංශාධිපතිනිය,
අධ්‍යාපන විද්‍යා අධ්‍යයනාංශය,
පේරාදෙණිය විශ්වවිද්‍යාලය,
පේරාදෙණිය.

සංක්ෂිප්තය

ද්විතීයික පාසල් ගුරුවරුන්ගේ රැකියා තෘප්තියේ ස්වභාවය හා ඒ කෙරෙහි බලපාන සාධක හඳුනා ගැනීම පර්යේෂණ අරමුණ විය. ඩින්හැම් සහ ස්කොට් (Dinham and Scott, 1998; 2000) ඉදිරිපත් කළ ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතිය න්‍යායාත්මක පදනම ලෙස ගෙන කළ සමීක්ෂණ පර්යේෂණයේ දී ප්‍රශ්නාවලියකින් දත්ත රැස් කිරීම සඳහා මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් 50කින් ගුරුවරුන් 700ක නියැදියක් අහඹු ලෙස තෝරා ගැනිණි. අනාවරණවලට අනුව ගුරුවරුන්ගේ රැකියා තෘප්තිය අඩු මට්ටමක පවතී (34.2%). රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්තියේ පහළ යෑමක් සිදු ව ඇත. සාධක විශ්ලේෂණයෙන් ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියේ ක්ෂේත්‍ර තුනට ම ගැළපෙන සාධක අටක් හඳුනා ගැනිණි. ශිෂ්‍ය සංවර්ධනයට සහාය වීම, අන්තර් ගුරු සහයෝගිතාව ඉහළ ම තෘප්තියට හේතුවන බව ද, පාසලට ඇති පිළිගැනීම-ගුරුවරයාගේ සමාජ තත්ත්වය, ඉටු කිරීමට පැවරී ඇති කාර්යභාරය, යන සාධක කෙරෙහි මධ්‍යස්ථ තෘප්තියක් ද, අධ්‍යාපන ප්‍රතිසංස්කරණ, උසස්වීම් ලබා ගැනීමට ඇති අවස්ථා, වෘත්තීය සංවර්ධනයට ලැබී ඇති අවස්ථා සහ විදුහල්පති නායකත්වය යන සාධක කෙරෙහි දැඩි අතෘප්තිය වාර්තා විය. ගුරුවරුන්ගේ රැකියා තෘප්තිය වැඩි දියුණු කිරීම සඳහා ගුරු ආකල්ප හා කුසලතා සංවර්ධනය, අධ්‍යාපන ප්‍රතිසංස්කරණ ඵලදායී ලෙස ක්‍රියාත්මක කිරීම හා අධ්‍යාපනය දේශපාලනීකරණයවීම වැළැක්වීම යෝජනා කෙරේ.

මුඛ්‍ය වචන: ද්විතීයික පාසල් ගුරුවරුන්, රැකියා තෘප්තිය, ත්‍රිත්ව - ක්ෂේත්‍ර ආකෘතිය

හැඳින්වීම

ලොව අනිකුත් වෘත්තීන් හා සසඳන විට ගුරු වෘත්තියට හිමි වන්නේ අනභිභවනීය ස්ථානයකි. අධ්‍යාපන අවස්ථා ශිෂ්‍යයින් වෙත සම්ප්‍රේෂණය කරන පාසල් අධ්‍යාපන ක්‍රියාවලියේ අත්‍යවශ්‍ය ම පුරුක වන ගුරුවරයාගෙන් අපේක්ෂිත කාර්යය සාර්ථක ව ඉටු වීම කෙරෙහි ඔහු හෝ ඇයගේ වෘත්තීය කුසලතා, නිර්මාණශීලිත්වය, කැපවීම හා අභියෝගවලට මුහුණ දීමට ඇති හැකියාව, වත්මන් යුගයේ දී වඩාත් අවශ්‍ය වේ. එහෙත් ඒ සියල්ලටම වඩා සිය රැකියාවෙන් ලබන තෘප්තිය, ගුරුවරයාගේ කාර්ය සාධනය මෙන් ම ශිෂ්‍ය සාධනය කෙරෙහි ද දැඩි බලපෑමක් ඇති කරයි (ලුම්ස්ඩෙන් Lumsden, 1998). එබැවින් **ගුරුවරයා තෘප්තිමත් වෘත්තිකයකු** බවට පත් කිරීම සමස්ත අධ්‍යාපන ක්‍රියාවලියේ සාර්ථකත්වය, එහි අපේක්ෂිත අරමුණු හා පරමාර්ථ, සාක්ෂාත් කරලීමේ භාරදූර කාර්යභාරය ඉටු කරවා ගැනීමට නිරන්තර රුකුලකි.

පර්යේෂිකාව ද්විතීයික පාසල් ගුරුවරියක ලෙස වසර විසි හතක් සේවය කිරීමෙන් ලත් අත්දැකීම් ඔස්සේ අවබෝධ කරගත් කරුණක් වූයේ, වර්තමානයේ බහුතරයක් ගුරුවරුන් රැකියාව පිළිබඳ අතෘප්තිය පළ කරන අවස්ථා වැඩි වෙමින් පවතින බවයි. ඒ අනුව තවදුරටත් අනෙකුත් ගුරුවරුන් හා පැවැත්වූ අවිධිමත් සම්මුඛ සාකච්ඡා අනුව ද අනුමාන කළ හැකි වූයේ, 1990 දශකය අග භාගයේ සිට ගුරුවරයා හා ද්විතීයික පාසල් අධ්‍යාපනය කෙරෙහි අධ්‍යාපන ප්‍රතිසංස්කරණවල (SBA වැනි අගැයීම් ක්‍රම, 5-E ආකෘතියට අනුව ඉගැන්වීම) බලපෑම ගුරුවරුන්ගේ අතෘප්තියට හේතු වන බවයි. ඊට අමතර ව ගුරු පත්වීම්, මාරුවීම් හා උසස්වීම් ලබා දීම ඇතුළු අධ්‍යාපනයේ සියලු අංශ දේශපාලනීකරණය වීමෙන් මතු වන අභියෝග හේතුවෙන් ගුරුවරුන්ගේ රැකියා තෘප්තිය හීන වී ඇත. එසේ ම ජීවත් වීමට සරිලන වැටුපක් හා වෙනත් ප්‍රතිදානයන් ලැබීම, අනිකුත් සමාන සුදුසුකම් සහිත වෙනත් වෘත්තිකයින්ට සාපේක්ෂ ව අඩුවීම හා ගුරුවරයාට පැරණි සමාජයේ පැවති පිළිගැනීම අඩුවීමත් රැකියා තෘප්තිය හීනවීම කෙරෙහි බලපා ඇති බව අවිධිමත් සම්මුඛ සාකච්ඡාවල දී තවදුරටත් අනාවරණය විය.

නව ලෝකයේ අභියෝග ජය ගැනීම සඳහා අධ්‍යාපනය මෙන් ම ගුරු භූමිකාව ද නවීකරණය විය යුතුයි. එහෙත් ඒ හේතුවෙන් ගුරු අභිප්‍රේරණය පහත වැටීම හෝ ගුරු කාර්යය කෙරෙහි දැඩි පීඩනයක් ඇති කරමින් රැකියා අතෘප්තිය වැඩි කිරීමට සමත් වේ නම් එහි සැබවින් ම ගැටලුකාරී තත්ත්වයක් පවතී. සෑම ගුරුවරයකු ම රැකියාවෙන් තෘප්තිමත් වේ නම්, ඔවුහු එම ආයතනයේ සතුටින් සේවය කිරීමට පමණක් නොව වඩාත් ඵලදායී සේවයක් ලබා දීමට ද පසුබට නොවෙති.

ගුරුවරයාගේ සමස්ත චර්යාව හා අධ්‍යාපන ව්‍යවහාරයන් කෙරෙහි ද ගුණාත්මක වෙනස්වීමක් අධ්‍යාපන ප්‍රතිසංස්කරණ ක්‍රියාත්මක කරවන බලධාරීන් ඇතුළු සමස්ත සමාජය ම බලාපොරොත්තු වන නමුත්, ඔවුන්ගේ අතෘප්තියට හේතුවන සාධක අවබෝධ කර ගැනීමට හෝ ඒ සඳහා පිළියම් යෙදීමට අධ්‍යාපන ප්‍රතිසංස්කරණ ක්‍රියාත්මක කරවන බලධාරීන්ගේ ද ප්‍රතිපත්ති සම්පාදකයින්ගේ ද අවධානය ප්‍රමාණවත් අයුරින් යොමු වී නැතැ යි අනුමාන කරන ලදී. එසේ ම ගුරුවරුන්ගේ රැකියා තෘප්තියේ ස්වභාවය හා ඒ කෙරෙහි බලපාන සාධක හඳුනා ගැනීමට සෘජු ලෙස සිදු කර ඇති විදේශීය සාහිත්‍යය බහුල වුවත් (Bishay, 1996; Dinham, 1992; Dinham and Scott, 1996, 1998, 2000; Michaelowa, 2002; Nias, 1981; Ololube, 2006; Saiti, 2007; Scott, Stone & Dinham, 2001; Zembylas and Papanastaiou, 2004), ශ්‍රී ලාංකීය අධ්‍යයන සීමිත වේ (කොතලාවල, 1995, රණවක, 2006). එසේ ම ද්විතීයික පාසල් ගුරුවරුන් පිළිබඳ ශ්‍රී ලාංකීය පර්යේෂකයින්ගේ විශේෂ අවධානයක් ද යොමු වී නැත. ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි බලපාන සාධක හඳුනා ගැනීමට විද්‍යාත්මක මුහුණුවරකින් ශ්‍රී ලංකාවේ කරන ලද ගවේෂණවල අඩුව යම් තරමින් හෝ මග හැරවීම සඳහා **මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම** හඳුනා ගැනීම අධ්‍යයනයේ මූලික පරමාර්ථය විය.

සාහිත්‍ය විමර්ශනය

වික්දහස් නවසිය අනුව දශකය අග භාගය වන තුරු ම ගුරුවරුන්ගේ රැකියා තෘප්තිය හා අතෘප්තිය කෙරෙහි බලපාන සාධක හඳුනා ගැනීමට ලොව පුරා පර්යේෂකයෝ බහුතරයක් හර්ස්බර්ග් ඇතුළු පිරිස (Herzberg et al. 1959) ඉදිරිපත් කළ **ද්වි-සාධක න්‍යාය** භාවිත කළහ. හර්ස්බර්ග් ඇතුළු පිරිස (1959) රැකියා තෘප්තිය හා අතෘප්තියට හේතුවන සාධක **ක්ෂේත්‍ර දෙකක්** යටතේ අනාවරණය කළහ. ඒ අනුව රැකියාවට සෘජු ලෙස සම්බන්ධ සාධක (සාධනය, පිළිගැනීම, කාර්යයන්හි ස්වභාවය, රැකියාවේ වගකීම් දැරීම සහ වර්ධනය සඳහා

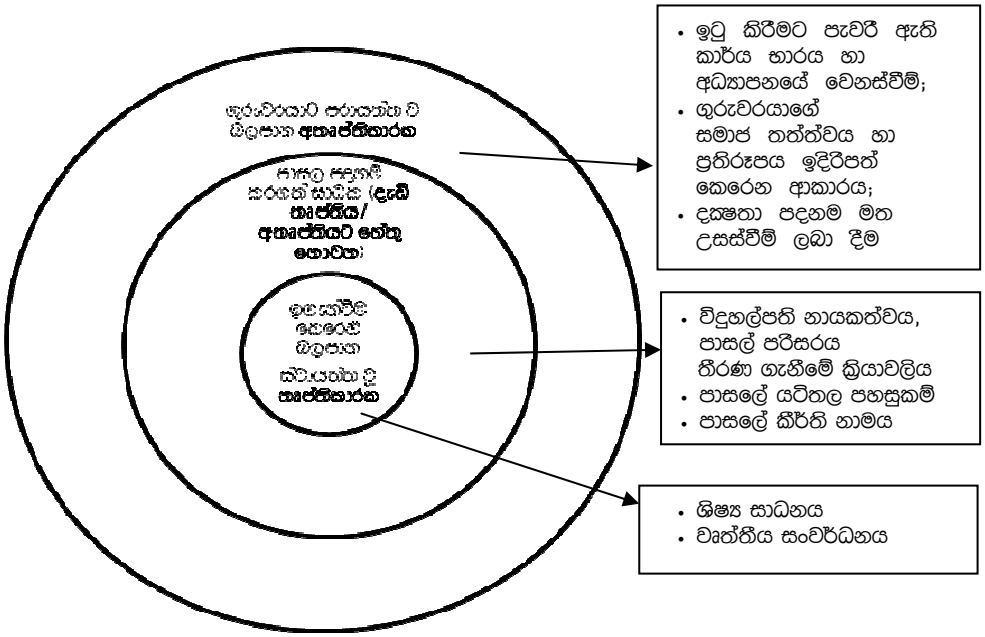
ඇති අවස්ථා) පුද්ගල අභිප්‍රේරණයට බලපාන බවත්, එම සාධක **අභිප්‍රේරණ සාධක** (Motivation Factors) ලෙසත් නම් කළහ. එසේ ම රැකියාවට සෘජු ලෙස බල නොපාන සාධක (රැකියා ප්‍රතිපත්ති, අධීක්ෂණය සහ සුපරීක්ෂණය, අන්තර් පුද්ගල සම්බන්ධතා, වැටුප සහ රැකියා තත්ත්වය) අතෘප්තිය ගෙන දීමට බලපාන බවත්, ඒවා **ස්වස්ථතා සාධක** (Hygiene Factors) ලෙසත් ඔවුහු නම් කළහ.

එසේ වුව ද, 1990 දශකය අග භාගයේ දී ඩින්හැම් සහ ස්කොට් (2000) හර්ස්බර්ග් ද්වී-සාධක න්‍යාය සමාලෝචනය කර ගුරුවරුන්ගේ රැකියා තෘප්තියට සාධක ක්ෂේත්‍ර දෙකක් නොව සාධක ක්ෂේත්‍ර තුනක් බලපාන බව **ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතිය** මගින් පළමු වරට පෙන්වා දුන් හ. ආකෘතියට,

1. ඉගැන්වීම ආශ්‍රිත සාධක, **<u>ස්වායත්ත තෘප්තිකාරක</u>**;

2. ගුරුවරුන්ගේ **<u>දැඩි තෘප්තිය හෝ අතෘප්තියට හේතු නොවන</u>** පාසල පදනම් වූ සාධක;

3. සමාජය හා අධ්‍යාපන පද්ධතිය මගින් ගුරුවරයාගේ ඉගැන්වීමට පරිබාහිර ව බලපෑම් කෙරෙන **<u>පරායත්ත අතෘප්තිකාරක</u>** යන කරුණු අයත් විය (1 වන රූපය).



1 වන රූපය : **ත්‍රිත්ව - ක්ෂේත්‍ර ආකෘතිය**
(මූලාශ්‍රය: Dinham and Scott, 2000, p. 389)

ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතිය පරීක්ෂාවට ලක් කරමින් ඩින්හැම් සහ ස්කොට් (2000) විසින් කළ අධ්‍යයනය අනුව ඕස්ට්‍රේලියානු ගුරුවරුන් වඩාත් තෘප්තියට පත් වී ඇත්තේ වෘත්තීය සංවර්ධනයට ඇති අවස්ථා හා ශිෂ්‍ය සාධනය යන සාධක කෙරෙහි ය. පාසලට ඇති පිළිගැනීම හා විදුහල්පති නායකත්වය යන සාධක කෙරෙහි මධ්‍යස්ථ තෘප්තියක් ප්‍රකාශ විය. එහෙත් ගුරුවරයාගේ සමාජ තත්ත්වය හා ජනමාධ්‍ය තුළින් ගුරුවරයාගේ ප්‍රතිරූපය සංජානනය කරන ආකාරය මෙන් ම උසස්වීම් ලබා ගැනීමට ඇති අවස්ථා කෙරෙහි ඔවුහු දැඩි ලෙස අතෘප්තිමත් වෙති. ඒ අනුව ඩින්හැම් සහ ස්කොට් (2000) විසින් හඳුන්වා දෙන ලද ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියේ ක්ෂේත්‍ර තුනටම අයත් සාධක ඕස්ට්‍රේලියානු ගුරුවරුන්ගේ රැකියා තෘප්තියට බලපෑම් කරයි.

එසේ ම සංවර්ධනය වෙමින් පවතින රටක් වන සයිප්‍රස්හි ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි බලපාන සාධක පිළිබඳ අධ්‍යයනය කළ සෙම්බිලාස් සහ පැපැනාස්ටාසියෝ (Zembylas and Papanastasiou, 2004) ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි ඩින්හැම් සහ ස්කොට් හෙළිදරව් කර ඇති **ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියේ** සමාජය හා අධ්‍යාපන පද්ධතිය මගින් බලපෑම් කරන තෙවන ක්ෂේත්‍රය නොසලකා හැරිය නොහැකි තරමට ඉස්මතු වෙමින් පවතින බව තහවුරු කරති. තව ද **ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියේ** තෙවන ක්ෂේත්‍රයට පමණක් අවධානය යොමු කර ඇති ඩ්ලාඩ්ලා (Dladla, 2005) දකුණු අප්‍රිකානු ගුරුවරුන් තම පාසලට සහ සමාජයට ලබා දෙන්නා වූ සේවය උදෙසා සමාජය හා ප්‍රජාවගෙන් ලැබෙන සහයෝගය හා ප්‍රශංසාව ප්‍රමාණවත් නොවන බව අනාවරණය කරයි.

පර්යේෂණ සාහිත්‍ය තුළ න්‍යායික ආකෘතීන්හි සංවර්ධනයක්වී ඇතත් ශ්‍රී ලංකාවේ ගුරුවරුන්ගේ රැකියා තෘප්තිය ආශ්‍රිත ව කර ඇති සීමිත අධ්‍යයන සඳහා හෝ පැහැදිලි න්‍යායික පදනමක් යොදා ගෙන නොමැති බව සාහිත්‍ය විමර්ශනයේ දී අනාවරණය විය. එසේ ම දර්ශනපති උපාධිය සඳහා ගුරුවරුන්ගේ රැකියා තෘප්තිය ආශ්‍රිත ව කර ඇති අධ්‍යයන නැත.

උපාධිධාරී ගුරුවරුන්ගේ වෘත්තීය අපේක්ෂණ පිළිබඳ සොයිසා (1991), ගම්පහ දිස්ත්‍රික්කයේ පාසල් 26ක ගුරුවරුන් 300ක නියැදියක් ඇසුරෙන් අධ්‍යාපනපති උපාධිය සඳහා අධ්‍යයනයක් කර සමීක්ෂණ ප්‍රශ්නාවලියක් හා සම්මුඛ සාකච්ඡා භාවිතයෙන් රැස්කරන ලද දත්ත ප්‍රතිශත භාවිතයෙන් විශ්ලේෂණය කර උපාධිධාරී ගුරුවරුන්ගෙන් 67%ක් සිය වෘත්තීය කෙරෙහි තෘප්තිමත් නොවන බව අනාවරණය කරයි. එහිදී නිවාඩු කාලය, වැඩෙහි යෙදෙන පැය ගණන සීමා වීම, විශ්‍රාම වැටුප් ගුරු වෘත්තිය කෙරෙහි කැමැත්තක් දැක්වීමට හේතු වන බව සඳහන් කරන අතර, වැටුප් ප්‍රමාණවත් නොවීම, අසාධාරණ උසස්වීම් සහ නිම කළ යුතු වැඩ සම්භාරය අධික වීම නිසා ඔවුන් අසතුට පත් කරවන බව සඳහන් කර ඇත. අධ්‍යයනයේ අනාවරණ අනුව පෙනී යන්නේ සරල සංඛ්‍යා විද්‍යාත්මක ක්‍රම ඇසුරෙන් දත්ත විශ්ලේෂණය කර ඇති බවත්, දත්තවල වලංගුතාව හා විශ්වසනීයතාව පිළිබඳ ගැටලු මතු කෙරෙන බවත් ය.

කොතලාවල (1995) **උපාධිධාරී ගුරුවරුන් සිය සේවාව තුළින් ලබන තෘප්තියේ ස්වභාවය** පිළිබඳ අධ්‍යයනයෙන් මානසික තෘප්තිය ගුරු රැකියා තෘප්තියට දැඩි බලපෑමක් ඇති කරන බව දක්වන ලදී. ඒ සඳහා මාතර දිස්ත්‍රික්කයේ රජයේ පාසල් අටක අහඹු ලෙස තෝරාගත් උපාධිධාරී ගුරුවරුන් අසූදෙනෙකු (ගුරුවරුන් = 28 ගුරුවරියන් = 52) ඇසුරෙන් සමීක්ෂණයක් කරන ලදී. ඒ අනුව ඉගැන්වීමට ප්‍රියතාවක් දක්වන ගුරුවරුන් මානසික වශයෙන් තෘප්තිමත් අය බවත්, රැකියා තෘප්තිය ඉහළ මට්ටමක පවතින අයගේ ඉගැන්වීම පිළිබඳ ධනාත්මක ආකල්ප, ආත්ම විශ්වාසය, ආත්ම තෘප්තිය ඉහළ මට්ටමක පවතින බවත් අනාවරණය කරන ලදී. එසේ ම, දුෂ්කර ප්‍රදේශ, පහසුකම් අඩු ප්‍රදේශවල සේවය කරන ගුරුවරුන්ගේ වෘත්තීය පිළිබඳ තෘප්තිමත් බව පහළ මට්ටමක පවතින බවත් වාර්තා

කරන ලදී. අධ්‍යයනයේ පාසල් අටක පහසු නියැදියක් ඇසුරෙන් දත්ත රැස් කර ඇති නිසා සොයිසා (1991) අධ්‍යයනයේ මෙන් ම මෙහි අනාවරණවල විශ්වසනීයතාව පිළිබඳ ගැටලු මතු කෙරේ.

රණවක (2006) රජයේ පාසල් **ගුරුවරුන්ගේ රැකියා තෘප්තියේ ස්වභාවය හා ඒ කෙරෙහි බලපාන සාධක** පිළිබඳ අධ්‍යයනය සඳහා කළුතර දිස්ත්‍රික්කයේ 1AB, 1C, 2 සහ 3 යන පාසල් වර්ග සියල්ල ම නියෝජනය වන පරිදි, අධ්‍යාපන කලාප තුනක, පාසල් 13කින් අහඹු ලෙස ගුරුවරුන් 155ක් තෝරා ගන්නා ලදී. ගුරුවරුන්ගේ රැකියා තෘප්තිය ඉහළ මට්ටමක පවතින අතර, ගුරුවරුන්ගේ දැඩි තෘප්තියට හේතුවන සාධකයක් ලෙස, ගුරුමණ්ඩලය හා පවත්වන ධනාත්මක අන්තර් සබඳතා හඳුනා ගැනිණි. අඩු ම තෘප්තියක් වාර්තාවන සාධක ලෙස, ශිෂ්‍ය සබඳතා, වෘත්තීය පුහුණු වැඩසටහන්, වැඩිදුර අධ්‍යාපනය හා උසස්වීම් ලබා දෙන ආකාරය අනාවරණය විය. එහෙත් වැටුප යන සාධකය මෙන් ම අධ්‍යාපන හා වෘත්තීය සුදුසුකම් සහ පාසල් වර්ගය යන විචල්‍ය තෘප්තිය කෙරෙහි බලපෑමක් ඇති නොකරයි. අධ්‍යයනයේ දත්තවල වලංගුතාව හා විශ්වසනීයතාව ඉදිරිපත් කෙරන ආකාරය ප්‍රමාණවත් නොවේ.

කුමාරසිංහ (Kumarasinghe, 1996) **ගුරුවරුන්ගේ වෘත්තිය පෙළඹවීම හා කැපවීම සඳහා හේතුවන සාධක** පිළිබඳ සමීක්ෂණය සඳහා කොළඹ නාගරික සීමාවේ පිහිටි 1AB, ජාතික පාසල්, 1C, 2 හා 3 වර්ගයේ පාසල් 10ක ගුරුවරුන් 180ක් තෝරා ගැනිණි. එම අනාවරණවලට අනුව, නියැදියෙන් 50.7%ක් ඉතා ඉහළ රැකියා තෘප්තියක් පළ කර ඇති අතර, 42.3%ක් මධ්‍යස්ථ තෘප්තියක් පළ කළහ. ඉහළ රැකියා තෘප්තියක් ඇති බව ප්‍රකාශ කර ඇති ගුරුවරුන්ගෙන් බහුතරයක් ජනප්‍රිය පාසල් හා 1AB පාසල්වලට අයත් ගුරුවරුන් ය. එම ගුරුවරුන්ගෙන් 80%ක් ශිෂ්‍ය සාධනය සම්බන්ධයෙන් වඩාත් තෘප්තියට පත් වූහ. ඊට අමතර ව පාසලේ කීර්තිනාමය, සමාජයෙන් ඔවුන් ලබන ගෞරවය, දෙමාපිය සමාජයෙන් ලැබෙන පිළිගැනීම, තම දරුවන් පාසල්වලට ඇතුළත් කර ගැනීමට ඇති හැකියාව ඔවුන්ගේ තෘප්තියට බලපා ඇති අනිකුත් සාධක ය. එහෙත් රැකියාවෙන් අතෘප්තිමත් ගුරුවරුන් බහුතරයක් 2 හා 3 වර්ගයේ පාසල්වලට අයත් වූවෝ ය. එම ගුරුවරුන්ගේ රැකියා අතෘප්තියට පාසලේ කීර්තිනාමය පහළ යෑම මූලික වශයෙන් හේතු වී ඇත. සමීක්ෂණයෙන් අනතුරු ව පවත්වන ලද සම්මුඛ සාකච්ඡාවල දී තෘප්තිමත් බව ප්‍ර කාශ කළ බහුතරයක් ගුරුවරුන් රැකියාවෙන් අතෘප්තිමත් බව කුමාරසිංහ (1996) පවසයි. රැකියාවෙන් අතෘප්තිමත් යැයි ප්‍රකාශ කළ බහුතරයක් ගුරුවරුන්ගේ අපේක්ෂාව වී ඇත්තේ අනාගත දියුණුව උදෙසා වෙනත් වෘත්තියකට යෑම විය. ඒ අනුව ප්‍රශ්නාවලියෙන් හා සම්මුඛ සාකච්ඡා ඇසුරෙන් ලබා ගත් දත්ත විශ්ලේෂණ ප්‍රතිඵල අතර විෂමතා පවතින බව ඔහු තවදුරටත් විග්‍රහ කරයි.

ප්‍රශ්නාවලි භාවිතයේ දී පර්යේෂකයා යම් කාලසීමාවක් තුළ පරීක්ෂිතයින්ගේ පිළිතුර පාලනය කිරීමක් කෙරේ. එහෙත් සම්මුඛ සාකච්ඡා පැවැත්වීමේ දී පුද්ගලයින්ගේ දැනුම, අදහස් හා විශ්වාසයන් ගවේෂණාත්මක ව අවබෝධ කර ගැනීමට පර්යේෂකයාට අවස්ථාවක් ලැබෙන බැවින් යොදා ගනු ලබන ක්‍රමවේදය අනුව ද ලැබෙන අනාවරණ රඳා පවතී. එබැවින් ප්‍රශ්නාවලි පමණක් භාවිතයෙන් වර්තමාන අධ්‍යයනය කිරීම ප්‍රමාණවත් නොවන බව මෙම අධ්‍යයනයේ ප්‍රතිඵල අනුව පැහැදිලි වේ. ප්‍රශ්නාවලි සම්බන්ධයෙන් මෙම දුර්වලතාව පර්යේෂකයින් විසින් ද පෙන්වා දී ඇත (ඩී ලියුව් සහ හොක්ස් De Leeuw, and Hox, 2008).

ශ්‍රී ලාංකීය පර්යේෂණ අනාවරණවලට අනුව ගුරුවරුන්ගේ රැකියා තෘප්තිය පිළිබඳ අධ්‍යයනය කිරීම සඳහා පර්යේෂකයින්ගේ අවධානය යොමු වී ඇති සාධක මෙම අධ්‍යයනයේ දී හඳුනා ගන්නා ලදී. එනම්: ප්‍රාදේශීය විවිධත්ව, පාසල් වර්ග, පුද්ගල හා වෘත්තීය පසුබිම් විචල්‍ය, සංදර්භමය සාධක, විවිධ ගුරු නියැදි මෙන් ම එකිනෙකට වෙනස් දත්ත රැස්කිරීමේ ක්‍රම හා විශ්ලේෂණ ක්‍රමශිල්ප භාවිතයට යොමුවීම ය. එහෙත් මෙම මාතෘකාව පිළිබඳ පැහැදිලි න්‍යායික පසුබිමක් මත ගුරුවරුන්ගේ රැකියා තෘප්තිය පිළිබඳ ව ම සිදු කර ඇති ශ්‍රී ලාංකීය අධ්‍යයන නැත. එසේ ම එම සමීක්ෂණවල දී භාවිත කරන ලද දත්ත පිළිබඳ ව සරල සංඛ්‍යා විද්‍යාත්මක විශ්ලේෂණ ඇසුරින් පමණක් නිගමනවලට එළඹී ඇති අතර, එම දත්තවල වලංගුතාව හා විශ්වසනීයතාව පිළිබඳ ගැටලු පවතී. ඒ අනුව මෙම අධ්‍යයනයේ දී රැකියා තෘප්තිය හා සම්බන්ධ න්‍යායික පදනම විමර්ශනය කිරීමටත් සංඛ්‍යා විද්‍යාත්මක ක්‍රම ඇසුරින් දත්ත විශ්ලේෂණය කිරීමත් අවශ්‍ය බව පැහැදිලි විය.

ක්‍රමවේදය

ද්විතීයික පාසල් ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම්වල ස්වරූපය හඳුනා ගැනීමේ පරමාර්ථය ඉටු කර ගැනීම සඳහා ගොඩනැඟූ සුවිශේෂී අරමුණු හතරකි.

1. මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තියේ ස්වභාවය හඳුනා ගැනීම.
2. ද්විතීයික පාසල් ගුරුවරුන්ගේ රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්ති මට්ටම්වල වෙනස්වීමේ ස්වභාවය විමසා බැලීම.
3. ද්විතීයික පාසල් ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි බලපාන සාධක සොයා බැලීම.
4. ගුරුවරුන්ගේ රැකියා තෘප්තිය ඉහළ නැංවීම සඳහා අවධානය යොමු විය යුතු කරුණු පිළිබඳ යෝජනා ඉදිරිපත් කිරීම.

ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි ස්ත්‍රී-පුරුෂභාවය, වයස, විවාහක-අවිවාහක බව, අධ්‍යාපන හා වෘත්තීය සුදුසුකම්, පාසල් වර්ගය, ගුරුවරයකු ලෙස සේවා කාලය, වර්තමාන පාසලේ සේවා කාලය හා උගන්වන විෂයය යන විචල්‍යවලින් ඇති කෙරෙන බලපෑම හඳුනා ගැනීම සඳහා කල්පිත නවයක් පිහිටුවා ගනු ලැබිණි. ඩින්හැම් සහ ස්කොට් (1998) විසින් නිර්මාණය කර වලංගුතාවට පත් කළ ප්‍රශ්නාවලිය ගුරුවරුන්ගේ රැකියා තෘප්තියේ ස්වභාවය හා ඒ කෙරෙහි බලපාන සාධක විමර්ශනය සඳහා යොදා ගැනිණි. එසේ ම එම ප්‍රශ්නාවලිය භාවිත කිරීමට පෙර එය ශ්‍රී ලංකාවේ සංදර්භයට ගැළපෙන පරිදි සංස්කරණය කර සිංහල භාෂාවට පරිවර්තනය කරන ලදී. එහෙත් මූලික ප්‍රශ්නාවලියේ තෙවෙනි කොටසෙහි වූ ගුරුවරුන්ගේ චිත්තවේගීය ස්වභාවය, කායික හා මානසික සෞඛ්‍යය මැන බැලීම සඳහා වූ ප්‍රශ්න වර්තමාන අධ්‍යයනයේ දී ප්‍රශ්නාවලියෙන් ඉවත් කෙරිණි. ශ්‍රී ලංකාවේ සංස්කෘතියට නොගැළපෙන සාධක එහි අන්තර්ගතවීම ඊට හේතු විය. ඒ අනුව මෙම අධ්‍යයනය සඳහා සකස් කරන ලද ප්‍රශ්නාවලිය මූලික කොටස් තුනකින් ඉදිරිපත් කරන ලදී.

පළමු කොටස - ගුරුවරුන්ගේ පුද්ගල හා වෘත්තීය පසුබිම් තොරතුරු

දෙවන කොටස - ගුරුවරුන්ගේ රැකියා තෘප්තිය/අතෘප්තියට බලපාන සාධක ක්ෂේත්‍ර 3 ක් යටතේ හඳුනා ගැනීම (ඉගැන්වීම ආශ්‍රිත සාධක; පාසල පදනම් වූ සාධක; සමාජය හා අධ්‍යාපන පද්ධතිය මගින් ගුරුවරයාගේ ඉගැන්වීමට පරිබාහිරව බලපෑම් කෙරෙන සාධක) ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තියේ ස්වභාවය හා රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්ති මට්ටම්වල වෙනස්වීමේ ස්වභාවය

තෙවන කොටස - රැකියා තෘප්තිය/අතෘප්තියට හේතුවන වෙනත් අදහස් හා යෝජනා පිළිබඳ විවෘත ව අදහස් දැක්වීමට අවස්ථාව සැලසීම

සංස්කරණය කළ ප්‍රශ්නාවලිය නියාමක පරීක්ෂණයකට අවස්ථා කිහිපයක දී භාජනය කරන ලදී. නියාමක පරීක්ෂණ පැවැත්වීමෙන් පසුව සමස්ත ප්‍රශ්නාවලියේ පළමු හා තෙවන කොටස් සංශෝධනය කිරීම අවශ්‍ය නොවූ නමුත්, **දෙවන කොටස** පමණක් දෙවරක් සංශෝධන කිරීම අවශ්‍ය විය.

නියාමක පරීක්ෂණයේ දී ප්‍රශ්නාවලියේ අයිතම 77 විශ්ලේෂණයට භාජනය කිරීමෙන් ලබා ගත් ප්‍රතිඵල අනුව සමස්ත ප්‍රශ්නාවලිය සඳහා ලැබූ ක්‍රෝන්බා ඇල්ෆා අගය (Cronbach's Alpha) අගය .90 විය. මෙම ප්‍රතිඵලවලින් පෙනී යන්නේ උපකරණයේ විශ්වසනීයතාව ඉතා උසස් බවයි. නියාමක පරීක්ෂණ ප්‍රතිචාර විශ්ලේෂණයෙන් ලබා ගත් තොරතුරු අනුව කුමන ප්‍රශ්නාංගවල වචනාර්ථයන් වෙනස් කළ යුතු ද නැති නම් ඉවත් කළ යුතු ද යන්න අවබෝධ කර ගැනීමට හැකි විය. එහෙත් නියාමක පරීක්ෂණයෙන් අනතුරු ව කිසිදු ප්‍රශ්නාංගයක් සම්පූර්ණයෙන් ඉවත් කිරීමක් අවශ්‍ය නොවී ය. ඒ අනුව සුදුසු පරිදි සංස්කරණය කිරීමෙන් අනතුරු ව අවසන් ප්‍රශ්නාවලිය සකස් කරන ලදී.

ඉලක්ක සංගහනය හා නියැදිය

පාසල් හා ගුරු නියැදිය තෝරා ගනු ලැබුයේ බහු පියවර නියැදිකරණය මගිනි. පළමු ව පොකුරු නියැදිකරණය මගින් දෙදහස් හය වර්ෂයේ පාසල් සංගණන වාර්තාවට අනුව මහනුවර දිස්ත්‍රික්කයට අයත් අධ්‍යාපන කලාප හය (මහනුවර, තෙල්දෙණිය, කටුගස්තොට, වත්තේගම, දෙනුවර හා ගම්පොල) අතුරෙන් සමස්ත දිස්ත්‍රික්කය ම නියෝජනය කළ හැකි පරිදි මහනුවර, තෙල්දෙණිය හා ගම්පොල යන අධ්‍යාපන කලාප තුනට අයත් ගුරු හා පාසල් සංගහනය තෝරා ගන්නා ලදී. 1 වන වගුවෙහි දැක්වෙන ආකාරයට ගොඩනඟා ගත් නියැදි රාමුවට අනුව **ස්තරගත අහඹු නියැදිකරණය** මගින් පළමු ව 1AB, 1C හා 2 වර්ගයට අයත් නාගරික, නාගරික නොවන හා දුෂ්කර මෙන් ම බාලක, බාලිකා හා මිශ්‍ර යන විචල්‍ය අනුව පාසල් 50ක් තෝරා ගන්නා ලදී.

1 වන වගුව: **පාසල් හා ගුරු නියැදි රාමුව**

	මහනුවර දිස්ත්‍රික්කය		
	ඉලක්ක සංගහනය	**ළඟා විය හැකි වූ සංගහනය**	**නියැදිය**
පාසල්	346	187	50
ගුරු	8188	4717	700

ගුරු නියැදිය තේරීම සඳහා අවශ්‍ය නියැදි තරම තීරණය කිරීම සඳහා බාට්ලීට්, කොට්‍රිලික් සහ හැගින්ස් (Bartlett, Kotrlik & Higgins, 2001) ඉදිරිපත් කර ඇති නියැදි තරම තීරණය පිළිබඳ වගුවේ සඳහන් මග පෙන්වීම් අනුගමනය කරන ලදී. ඒ අනුව තෝරා ගත යුතු ගුරු නියැදියේ අවම අගය 367ක් විය. එහෙත් පාසල්වල පිහිටීම අනුව නාගරික, නාගරික නොවන සහ ග්‍රාමීය (දුෂ්කර) වශයෙන් සියලු පාසල් වර්ග නියෝජනය වන ආකාරයට බාලක, බාලිකා හා මිශ්‍ර පාසල් ද අයත්වන සේ නියැදියක් තේරීමේ දී, ඒ සඳහා ගුරුවරුන් 700ක ප්‍රමාණයක්

තෝරා ගැනීම වඩාත් යෝග්‍ය විය. ඒ අනුව සමීක්ෂණය සඳහා මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් 50කින් ගුරුවරු 700ක් අහඹු ලෙස තෝරා ගන්නා ලදී.

අධ්‍යයනයේ දී පර්යේෂණයට සහභාගී වූ ගුරුමහත්ම මහත්මීන්ගේ අයිතීන් සුරැකීමට ද කටයුතු කරන ලදී. පළාත් අධ්‍යාපන අධ්‍යක්ෂවරයා හා කලාප අධ්‍යාපන අධ්‍යක්ෂවරුන්ගේ නියමිත ලිඛිත අවසරයක් ලබා ගන්නා තුරු තෝරා ගත් පාසල්වලින් දත්ත රැස් නොකරන ලදී. එසේ ම ප්‍රශ්නාවලියේ පාසලේ නම හෝ පරීක්ෂිතයාගේ නම සඳහන් කිරීමක් අවශ්‍ය නොවූ බැවින් ගුරුවරුන්ගේ අනන්‍යතාව හෙළි නොවන ආකාරයට දත්ත රැස් කිරීමට කටයුතු කරන ලදී. තව ද නියෝජිතයකු ලවා ප්‍රශ්නාවලි රැස්කිරීමට කටයුතු යෙදීමේ දී ලිපි කවරයක බහා මුද්‍රා තබා ඒවා ගෙන්වා ගන්නා ලදී.

දත්ත විශ්ලේෂණය

ප්‍රශ්නාවලියේ (පළමු හා දෙවන කොටස්වල) දත්ත කේත කරමින් විශ්ලේෂණය සඳහා භාවිත කෙරිණි. ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තිය හා රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්තියේ වෙනස්වීම පිළිබඳ ගුරු තක්සේරුව 1 සිට 7 දක්වා වූ ලයිකට් පරිමාණයට අනුව ලබා ගෙන ප්‍රතිශත ඇසුරින් විශ්ලේෂණය කෙරිණි.

ගුරුවරුන්ගේ පුද්ගල හා වෘත්තීය පසුබිම් සාධකවලින් (ස්ත්‍රී-පුරුෂභාවය, වයස, විවාහක-අවිවාහක බව, අධ්‍යාපන හා වෘත්තීය සුදුසුකම්, පාසල් වර්ගය, ගුරුවරයකු ලෙස සේවා කාලය, වර්තමාන පාසලේ සේවා කාලය හා උගන්වන විෂය) ඇති කෙරෙන බලපෑම හඳුනා ගැනීම සඳහා අභිශූන්‍ය කල්පිත නවයක් පරීක්ෂාවට ලක් කරන ලදී. ඒ සඳහා ප්‍රතිශත, ඒක විචලතා විශ්ලේෂණ, ස්වාධීන t-පරීක්ෂාව යන විශ්ලේෂණ ක්‍රම භාවිත කෙරිණි. බහුගුණ ප්‍රතිපායන පරීක්ෂාවෙන් රැකියා තෘප්තිය හා පුද්ගල බද්ධ සාධක අතර පවතින සම්බන්ධයේ සැබෑ ස්වරූපය හඳුනා ගැනිණි.

ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියට අනුව ගුරුවරුන්ගේ රැකියා තෘප්තියට බලපාන සාධක හඳුනා ගැනීමට සාධක විශ්ලේෂණය සිදු කෙරිණි. විචල්‍යවල බර අනුව ගොනුගත වීම සලකා .50 ට අඩු බරක් සහිත විචල්‍ය 38ක් ඉවත් කළ අතර .50 ට වැඩි බරක් සහිත විචල්‍ය 37ක් පමණක් සංඛ්‍යාත්මක වශයෙන් ක්ෂේත්‍ර තුනට ගොනු කරන ලදී.

1. ඉගැන්වීම ආශ්‍රිත සාධක (පළමු ක්ෂේත්‍රය) - අයිතම 8
2. පාසල් මට්ටමේ සාධක (දෙවන ක්ෂේත්‍රය) - අයිතම 14
3. අධ්‍යාපන පද්ධතිය හා සමාජයීය සාධක (තෙවන ක්ෂේත්‍රය) - අයිතම 15කින් සමන්විත විය.

සංඛ්‍යාත්මක ප්‍රතිඵල ඇසුරෙන් හඳුනා ගනු ලැබූ ගුරුවරුන්ගේ රැකියා තෘප්තියේ ස්වභාවය සහ ඒ කෙරෙහි බලපාන සාධකවලට අමතර ව වෙනත් සාධකවල බලපෑමක් තිබේ ද යන්න හදුනා ගැනීම සඳහා ප්‍රශ්නාවලියේ තෙවන කොටසට ලැබූ ගුණාත්මක දත්ත, අනවරත සංසන්දනාත්මක ක්‍රම ශිල්පය භාවිතයෙන් විශ්ලේෂණය කරන ලදී (මීරියම් Merriam, 1998).

පර්යේෂණ අනාවරණ හා අර්ථකථනය

(1) ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තිය

ඉගැන්වීම කෙරෙහි ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තිය පිළිබඳ ගුරු තක්සේරුව පිළිබඳ 1 සිට 7 දක්වා වූ ලයිකට් පරිමාණයට අනුව ලද ප්‍රතිඵල 2 වන වගුවේ දැක්වෙන අයුරු නැවත ප්‍රවර්ග තුනකට වර්ග කරනු ලැබිණි. ඒ අනුව මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් ගුරුවරුන්ගෙන් 47.3%ක් තමන් රැකියාවෙන් අතෘප්තිමත් බව සඳහන් කරන ලදී. එසේ ම රැකියාවෙන් තෘප්තිමත් ගුරු ප්‍රතිශතය ආසන්න වශයෙන් මුළු නියැදියෙන් තුනෙන් එකක් (34.2%) පමණ වේ. ඩින්හැම් සහ ස්කොට් (1998) ඕස්ට්‍රේලියානු ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තිය 50%ක් බව සඳහන් කර ඇති නිසා මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තිය පිළිබඳ ලැබූ අනාවරණ ඩින්හැම් සහ ස්කොට්ගේ අනාවරණවලට පටහැණි ය. එනම්, ඕස්ට්‍රේලියානු ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තියට සාපේක්ෂ ව මහනුවර දිස්ත්‍රික්කයේ ද්විතීයික පාසල් ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්තිය පහළ මට්ටමක පවතී.

2 වන වගුව: **ගුරුවරුන්ගේ වර්තමාන රැකියා තෘප්ති මට්ටම්**

	තරාව (Rating)	**ප්‍රතිශත අගයයන්**	**තෘප්ති මට්ටම් හා ප්‍රතිශත අගයයන්**	
			තෘප්ති මට්ටම්	**ප්‍රතිශත**
7	ඉතා තෘප්තිමත්	7.2	තෘප්තිමත්	34.2
6	තෘප්තිමත්	13.4		
5	යම් තරමකට තෘප්තිමත්	13.6		
4	තෘප්තියක් හෝ අතෘප්තියක් නැති	18.5	මධ්‍යස්ථ	18.5
3	යම් තරමකට අතෘප්තිමත්	18.3	අතෘප්තිමත්	47.3
2	අතෘප්තිමත්	20.3		
1	ඉතා අතෘප්තිමත්	8.7		
	එකතුව	**100**		**100**

(2) රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්තියේ වෙනස්වීම

ගුරුවරුන්ගේ රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව ඉගැන්වීම කෙරෙහි පවතින තෘප්තියේ ඇති වූ වෙනස පිළිබඳ ප්‍රතිඵල 3 වන වගුවේ දැක්වේ. එම අනාවරණ අනුව ගුරු නියැදියෙන් 47.3%ක් රැකියාවට පැමිණි කාලයට වඩා දැන් අතෘප්තිමත් බව පළ කර ඇති අතර, ඉගැන්වීමෙන් තෘප්තියක් ලැබීම රැකියාවට පැමිණි කාලයට වඩා දැන් වැඩි වී ඇති බව සඳහන් කරන්නේ 34%ක ගුරු පිරිසකි. එසේ ම ඉහත ප්‍රතිඵල

අනුව රැකියාවට පැමිණි මුල් කාලය හා සසඳන විට මුලින් පැවති තෘප්ති මට්ටමේ වෙනසක් වී නොමැති බවට 18.7%ක් අදහස් දක්වති. ඩින්හැම් සහ ස්කොට් (1998) ඕස්ට්‍රේලියානු ගුරුවරුන්ගේ රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂව රැකියා තෘප්තියේ අඩුවීම 59%ක් බව සඳහන් කර ඇති නිසා රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්තියේ වෙනස්වීම පිළිබඳ විමසිමේ දී ශ්‍රී ලාංකීය මෙන් ම ඕස්ට්‍රේලියානු ගුරුවරුන්ගේ ද රැකියා තෘප්තියේ පහළ යෑමක් පෙන්නුම් කෙරේ.

3 වන වගුව: **රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව ගුරුවරුන්ගේ රැකියා තෘප්තියේ වෙනස් වීම**

	තරාව (Rating)	**ප්‍රතිශත අගයය**	**තෘප්ති මට්ටම් හා ප්‍රතිශත අගයයන්**	
			තෘප්ති මට්ටම්	**ප්‍රතිශත**
7	දැන් ඉතා තෘප්තිමත්	7.2	දැන් තෘප්තිමත්	34.0
6	දැන් තෘප්තිමත්	13.2		
5	යම් තරමකට දැන් තෘප්තිමත්	13.6		
4	තෘප්තිය හෝ අතෘප්තිය වෙනස් වී නැති	18.7	තෘප්තිය වෙනස් වී නැති (මධ්‍යස්ථ)	18.7
3	යම් තරමකට දැන් අතෘප්තිමත්	18.1	දැන් අතෘප්තිමත්	47.3
2	දැන් අතෘප්තිමත්	20.3		
1	දැන් ඉතා අතෘප්තිමත්	8.9		
	එකතුව	**100**		**100**

(3) රැකියා තෘප්තියට බලපාන සාධක

- <u>ගුරුවරුන්ගේ පුද්ගල හා වෘත්තීය පසුබිම් තොරතුරු</u>

<u>i සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර සම්බන්ධය</u>

H_0 : **<u>අභිශූන්‍ය කල්පිතය</u>**

සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් නැත.

H_1 : **<u>පරීක්ෂණ කල්පිතය</u>**

සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් ඇත.

මෙම කල්පිතය පරීක්ෂා කිරීම සඳහා කළ ඒක විචලතා විශ්ලේෂණ (One Way ANNOVA) පරීක්ෂාවෙන් ලැබුණු ප්‍රතිඵල 4 වන වගුවේ දැක්වේ.

4 වන වගුව: **සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර සම්බන්ධය**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.520	4	10.630	3.567	**.007**
Within Groups	1496.017	502	2.980		
Total	1538.536	506			

p< .05

ඉහත වගුවෙහි ප්‍රතිඵල අනුව, මහනුවර දිස්ත්‍රික්කයේ ගුරුවරුන්ගේ **සේවා කාලය හා රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් පවතී** (F=3.567, p =.007, < p= .05). ඒ අනුව පරීක්ෂණ කල්පිතය පිළිගනු ලැබූ අතර, H_0 කල්පිතය ප්‍රතික්ෂේප විය. ඒ පිළිබඳ තවදුරටත් පරීක්ෂා කිරීම සඳහා කළ බහුගුණ ප්‍රතිපායන පරීක්ෂාවෙන් ලැබුණු ප්‍රතිඵල 5 වන වගුවේ දැක්වේ.

5 වන වගුව: **සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි සම්බන්ධය**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant	2.270	.133		17.081	.000
Length of service	-.123	.039	-.140	-3.183	.002

p< .05

ඉහත ප්‍රතිඵල අනුව, ගුරුවරයකු ලෙස සේවා කාලය හා රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි සෘණ සහසම්බන්ධතාවක් (බීටා සංගුණකය =-.140) හඳුනාගත හැකි විය. එයින් පැහැදිලි වන්නේ සේවා කාලය වැඩිවීමත් සමඟ ගුරුවරුන්ගේ රැකියා තෘප්තිය අඩුවීමේ නැඹුරුතාවක් ඇති බවයි. ග්‍රීන්බර්ග් සහ බාරොන් (Greenberg and Baron, 1995) සේවා කාලය අඩු ගුරුවරුන් හා සැසඳීමේ දී සේවා කාලය වැඩි ගුරුවරුන්ගේ රැකියා තෘප්තිය පහළ මට්ටමක පවතින බව හෙළිදරව් කර ඇත. වර්තමාන අධ්‍යයනයේ අනාවරණ ඒ හා විකඟත්වය පළ කරයි.

ii වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර සම්බන්ධය

H_0 : **අභිශූන්‍ය කල්පිතය**

වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් නැත.

H_1 **: පරීක්ෂණ කල්පිතය**

වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් ඇත.

මෙම කල්පිතය පරීක්ෂා කිරීම සඳහා ඒක විචලතා විශ්ලේෂණ පරීක්ෂාවෙන් ලැබුණු ප්‍රතිඵල අනුව (6 වන වගුව) වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම්වල වෙසෙසි වෙනසක් පවතී (F=2.835, p=.024, <p=.05). ඒ අනුව පරීක්ෂණ කල්පිතය පිළිගනු ලැබූ අතර, H_0 කල්පිතය ප්‍රතික්ෂේප විය.

6 වන වගුව: **වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර සම්බන්ධය**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.990	4	8.498	2.835	**.024**
Within Groups	1504.546	502	2.997		
Total	1538.536	506			

p< .05

වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි සහසම්බන්ධය පරීක්ෂා කිරීම සඳහා බහුගුණ ප්‍රතිපායන පරීක්ෂාවක් කළ අතර, ලැබුණු ප්‍රතිඵල 7 වන වගුවෙහි දැක්වේ.

7 වන වගුව: **වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි සම්බන්ධය**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.339	.066		35.535	.000
3.76	-.041	.016	-.115	-2.597	.010

p< .05

වර්තමාන පාසලේ සේවා කාලය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි සෘණ සහසම්බන්ධතාවක් (බීටා සංගුණකය = -.115) අනාවරණය විය. ඒ අනුව එක ම පාසලේ සේවා කාලය වැඩිවන විට ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම්වල අඩුවීමේ නැඹුරුවක් පෙන්නුම් කරයි. මේ හා සමාන තත්ත්වයක් ඕස්ට්‍රේලියානු ගුරුවරුන් අතර ද පවතින බව ඩින්හැම් සහ ස්කොට් (1998) ඕස්ට්‍රේලියානු ගුරුවරුන් ඇසුරෙන් කරන ලද අධ්‍යයනවලින් ද අනාවරණය වී ඇත.

iii. <u>උගන්වන විෂයය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර සම්බන්ධය</u>

H_0 : **<u>අභිශූන්‍ය කල්පිතය</u>**
උගන්වන විෂයය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් නැත.

H_1 : **<u>පරීක්ෂණ කල්පිතය</u>**
උගන්වන විෂයය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනසක් ඇත.

මෙම කල්පිතය පරීක්ෂා කිරීම සඳහා ඒක විචලතා විශ්ලේෂණ පරීක්ෂාවෙන් ලැබුණු ප්‍රතිඵල අනුව (8 වන වගුව) උගන්වන විෂයය හා මහනුවර දිස්ත්‍රික්කයේ ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම්වල වෙසෙසි වෙනසක් අනාවරණය විය (F=3.315, p=.006, < p=.05). ඒ අනුව පරීක්ෂණ කල්පිතය පිළිගනු ලැබූ අතර, H_0 කල්පිතය ප්‍රතික්ෂේප විය.

8 වන වගුව: **උගන්වන විෂයය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර සම්බන්ධය**

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	49.272	5	9.854	3.315	**.006**
Within Groups	1489.264	501	2.973		
Total	1538.536	506			

p<.05

තවදුරටත් එක් එක් විෂයය කෙරෙහි පවතින තෘප්ති මට්ටම්වල මධ්‍යන්‍යය හා සම්මත අපගමන අගයයන් ගණනය කිරීමෙන් ලැබුණු ප්‍රතිඵල අනුව (9 වන වගුව) පිළිවෙළින් සිංහල (මධ්‍යන්‍යය=4.17) හා බුද්ධ ධර්මය (මධ්‍යන්‍යය=4.13) විෂයයන් උගන්වන ගුරුවරුන් වැඩිම තෘප්තියක් පළ කරති. විද්‍යා විෂයය උගන්වන (මධ්‍යන්‍යය=3.83) ගුරුවරුන්ගේ තෘප්ති මට්ටම් හා ගණිත ගුරුවරුන්ගේ (මධ්‍යන්‍යය=3.73) තෘප්ති මට්ටම් අතර විශාල වෙනසක් අනාවරණය නොවූවත්, සිංහල හා බුද්ධ ධර්මය යන විෂයයන්ට සාපේක්ෂ ව විද්‍යා හා ගණිත ගුරුවරුන්ගේ රැකියා තෘප්තිය පහළ මට්ටමක පවති. එහෙත් වඩාත් ම අතෘප්තිය පළ කර ඇත්තේ ඉතිහාස විෂයය (මධ්‍යන්‍යය=3.24) උගන්වන ගුරුවරුන් ය. ඒ අනුව මහනුවර දිස්ත්‍රික්කයේ **විවිධ විෂයයන් උගන්වන ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙනස්කම් පවති**. ප්‍රශ්නාවලියේ විවෘත ප්‍රශ්න විශ්ලේෂණයෙන් ලැබූ අනාවරණ ද මෙම ප්‍රතිඵල සනාථ කරයි.

9 වන වගුව: **උගන්වන විෂයය හා ගුරුවරුන්ගේ රැකියා තෘප්තිය සඳහා වූ මධ්‍යන්‍යය හා සම්මත අපගමන අගයයන්**

උගන්වන විෂයය	**සංඛ්‍යාව (N)**	**මධ්‍යන්‍යය (Mean)**	**සම්මත අපගමනය (Std.Deviation)**
සිංහල	100	4.17	1.787
බුද්ධ ධර්මය	53	4.13	1.776
ගණිතය	90	3.73	1.816
විද්‍යාව	83	3.83	1.724
ඉංග්‍රීසි	106	3.56	1.668
ඉතිහාසය	75	3.24	1.558
එකතුව	**507**	**3.77**	**1.744**

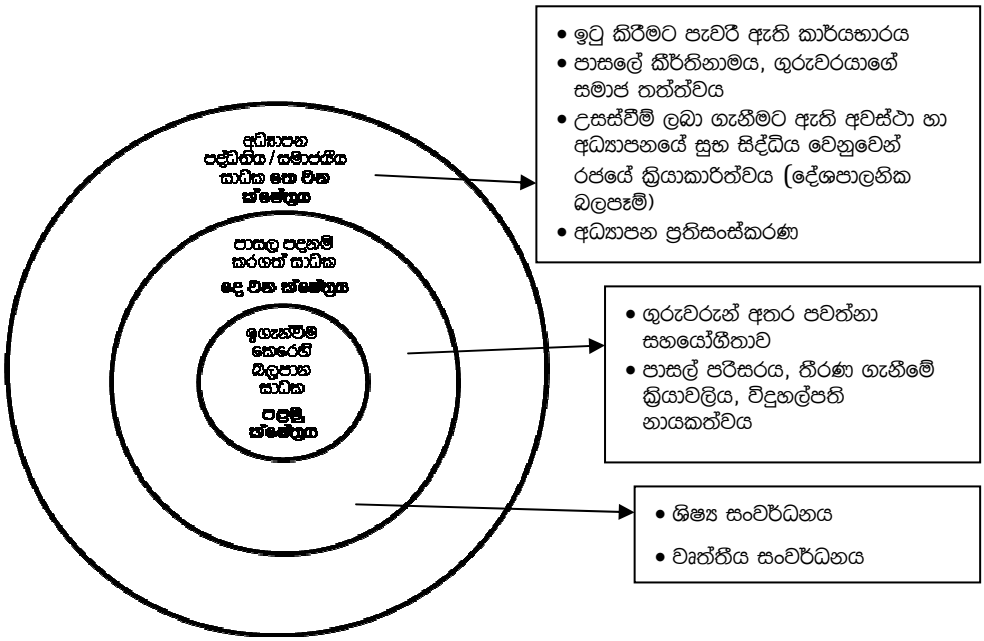
පර්යේෂණ අනාවරණවලට අනුව ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම්වල වෙසෙසි වෙනස්කම් ඇති කිරීමට උගන්වනු ලබන විෂයය බලපාන බව චික්සත් රාජධානියේ ගුරු නියැදියක් ඇසුරෙන් අධ්‍යයනයක් කරමින් බිෂේ (1996) පෙන්වා දී ඇත. විද්‍යා හා ගණිත ගුරුවරුන්ගේ රැකියා තෘප්තිය p<.001 මට්ටමෙන් වෙසෙසි වන අතර, ඉගැන්වීමෙන් ලබන තෘප්තිය පිළිවෙළින් 61.5% (මධ්‍යන්‍යය = 4.25) හා 60% (මධ්‍යන්‍යය = 4.54) වන බව තවදුරටත් ඔහු අනාවරණය කරයි. එසේ ම ඉංග්‍රීසි හා සමාජ අධ්‍යයන විෂයය උගන්වන ගුරුවරුන්ගේ රැකියා තෘප්තිය පිළිවෙළින් 54.5% (මධ්‍යන්‍යය = 3.97) හා 33.3% (මධ්‍යන්‍යය = 3.81) වී ඇත. ඒ අනුව චික්සත් රාජධානියේ විද්‍යා හා ගණිත ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම්වල වෙනස්කම් පවතී.

ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් කෙරෙහි ස්ත්‍රී-පුරුෂභාවය (t = -1.209, p =.227, > p=.05), වයස (F=2.039, p =.088, > p=.05), විවාහක - අවිවාහක බව (t=- 1.236, p =.217, > p=.05), අධ්‍යාපන සුදුසුකම් (F=1.679, p = 0.171, > p=.05), වෘත්තීය සුදුසුකම් (F=1.264, p =.272, > p=.05) මෙන් ම පාසල් වර්ගයෙන් (F=1.060, p =.347, > p=.05) වෙසෙසි බලපෑමක් ඇති නොකරයි. එහෙත් ගුරුවරයකු ලෙස සේවා කාලය, වර්තමාන පාසලේ සේවා කාලය හා උගන්වන විෂයය හා ගුරුවරුන්ගේ රැකියා තෘප්ති මට්ටම් අතර වෙසෙසි වෙනස්කම් හඳුනාගත හැකි විය.

ත්‍රිත්ව - ක්ෂේත්‍ර ආකෘතියේ ක්ෂේත්‍රවලට අදාළ සාධක

කල්පිත පරීක්ෂාවට අමතර ව සාධක විශ්ලේෂණයෙන් ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි බලපාන **ත්‍රිත්ව - ක්ෂේත්‍ර ආකෘතියේ** එක් එක් ක්ෂේත්‍රයට ගැළපෙන සාධක අටක් අනාවරණය විය (2 වන රූපය බලන්න). එනම්, ශිෂ්‍ය සංවර්ධනය (මධ්‍යන්‍යය = 5.57), ගුරුවරුන් අතර පවත්නා සහයෝගීතාව (මධ්‍යන්‍යය = 5.00), ඉටු කිරීමට පැවරී ඇති කාර්යභාරය (මධ්‍යන්‍යය = 4.31), පාසලේ කීර්තිනාමය, ගුරුවරයාගේ සමාජ තත්ත්වය (මධ්‍යන්‍යය = 4.29), වෘත්තීය සංවර්ධනය සඳහා ඇති අවස්ථා (මධ්‍යන්‍යය = 3.98), පාසල් පරිසරය, තීරණ ගැනීමේ ක්‍රියාවලිය හා විදුහල්පති නායකත්වය

(මධ්‍යන්‍යය = 3.92), උසස්වීම් ලබා ගැනීමට ඇති අවස්ථා හා අධ්‍යාපනයේ සුභ සිද්ධිය වෙනුවෙන් රජයේ ක්‍රියාකාරිත්වය (දේශපාලනික බලපෑම්) (මධ්‍යන්‍යය = 3.62), අධ්‍යාපන ප්‍රතිසංස්කරණ (මධ්‍යන්‍යය = 3.61) යන සාධක ය.



2 වන රූපය : ත්‍රිත්ව -ක්ෂේත්‍ර ආකෘතියට අනුව හඳුනා ගත් මහනුවර දිස්ත්‍රික්කයේ ගුරුවරුන්ගේ රැකියා තෘප්තියට බලපාන සාධක

ඉහත ප්‍රතිඵල අනුව ගුරුවරුන් වඩාත් තෘප්තිමත් බව සඳහන් කර ඇත්තේ ශිෂ්‍යයාගේ සංවර්ධනයට සහාය දැක්වීමෙන් හා ධනාත්මක අන්තර් ගුරු සම්බන්ධතා පැවැත්වීමෙනි. ඉන් පැහැදිලි වන්නේ ගුරුවරුන්ගේ ආකල්ප සංවර්ධනය හා සමාජයීය අවශ්‍යතා පිළිබඳ වැඩි අවධානයක් යොමු කළ යුතු බවයි. පාසලේ කීර්තිනාමය, ගුරුවරයාගේ සමාජ තත්ත්වය පිළිබඳ මධ්‍යස්ථ තෘප්තියක් වාර්තා විය. ප්‍රශ්නාවලියේ විවෘත ප්‍රශ්න විශ්ලේෂණයෙන් අනාවරණය වූයේ 1AB පළාත් සභා පාසල් හා ජාතික පාසල්වල සේවය කරන ගුරුවරුන්ගේ රැකියා තෘප්තිය ඉහළ තලයක පවතින බවත්, 1C දුෂ්කර පාසල්වල සේවය කරන ගුරුවරුන්ගේ රැකියා තෘප්තිය අඩු බවත් ය. කොළඹ නාගරික සීමාවේ පිහිටි විවිධ වර්ගයේ (1AB, ජාතික පාසල්, 1C, 2 හා 3 වර්ගයේ) පාසල් 10 ක ගුරුවරුන් 180ක් ඇසුරෙන් කුමාරසිංහ (1996) කරන ලද අධ්‍යයනයක දී ඉහළ රැකියා තෘප්තියක් ඇති බව ප්‍රකාශ කර ඇති ගුරුවරුන්ගෙන් බහුතරයක් ජනප්‍රිය පාසල් හා 1AB පාසල්වලට අයත් ගුරුවරුන් බව හඳුනා ගෙන ඇත.

තවදුරටත් ඉටු කිරීමට පැවරී ඇති කාර්යභාරය කෙරෙහි ගුරුවරුන්ගේ මධ්‍යස්ථ තෘප්තියක් වාර්තා විය. ඒ සඳහා ඉගැන්වීමට ඇති කාලයෙන් වැඩි කොටසක් ලිපි ගොනු නඩත්තු කිරීමට හා පෝරම පිරවීමට සිදු වී ඇති බව ප්‍රශ්නාවලියේ විවෘත ප්‍රශ්න විශ්ලේෂණයෙන් ද සනාථ විය. එසේ ම වඩාත් අතෘප්තිමත් සාධක ලෙස හඳුනා ගත හැකි වූයේ, අධ්‍යාපන

ප්‍රතිසංස්කරණ යටතේ හඳුන්වා දුන් පාසල් පාදක ඇගයීම් හා 5-E ආකෘතියට අනුව ඉගැන්වීමයි. තව ද, උසස්වීම් ලබා ගැනීමට ඇති අවස්ථා, අධ්‍යාපනය දේශපාලනීකරණය වීම කෙරෙහි ද ගුරු අතෘප්තිය චාර්තා විය. එසේ ම වෘත්තීය සංවර්ධනයට ලැබී ඇති අවස්ථා කෙරෙහි අතෘප්තිය පළ වී ඇත්තේ පුහුණු අවස්ථාවල පවතින ගුණාත්මක බව පිරිහීමත් නව අධ්‍යාපන ප්‍රතිසංස්කරණ පිළිබඳ ගුරුවරුන් දැනුවත් කෙරෙන ආකාරයේ දුර්වලතා පිළිබඳවත් ය. විදුහල්පති නායකත්වයේ ගුණාත්මක බව පිරිහීම කෙරෙහි ද දැඩි අතෘප්තියක් පළ විය.

ඉහත සාධකවලට අමතර ව ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි ගුරුවරයකු ලෙස සේවා කාලය, වර්තමාන පාසලේ සේවා කාලය හා උගන්වන විෂයය යන සාධක වෙසෙසි බලපෑමක් ඇති කරයි.

පර්යේෂණ අනාවරණ

ගුරුවරුන්ගේ රැකියා තෘප්තියේ ස්වභාවය

මහනුවර දිස්ත්‍රික්කයේ රැකියාවෙන් තෘප්තිමත් ද්විතීයික පාසල් ගුරු ප්‍රතිශතය 34.2%ක් වූ අතර, රැකියාවට පැමිණි මුල් කාලයට සාපේක්ෂ ව රැකියා තෘප්තිය අඩු වීමේ ප්‍රතිශතය 47.3% කි.

ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි බලපාන සාධක

- ගුරුවරුන් වඩාත් තෘප්තිමත් වන්නේ ශිෂ්‍යයාගේ සංවර්ධනයට සහාය දැක්වීමෙන් හා ධනාත්මක අන්තර් ගුරු සම්බන්ධතා පැවැත්වීමෙනි.
- අවම රැකියා තෘප්තිය පළ වූයේ වෘත්තීය සංවර්ධනයට ඇති අවස්ථා; පාසල් පරිසරය, තීරණ ගැනීමේ ක්‍රියාවලිය හා විදුහල්පති නායකත්වය; උසස්වීම් ලබා ගැනීමට ඇති අවස්ථා හා අධ්‍යාපනයේ සුභ සිද්ධිය වෙනුවෙන් රජයේ ක්‍රියාකාරිත්වය (දේශපාලනික බලපෑම්); අධ්‍යාපන ප්‍රතිසංස්කරණ ක්‍රියාත්මක කෙරෙන ආකාරය පිළිබඳව ය.
- පාසලේ කීර්තිනාමය, ගුරුවරයාගේ සමාජ තත්ත්වය, ඉටු කිරීමට පැවරී ඇති කාර්යභාරය කෙරෙහි මධ්‍යස්ථ තෘප්තියක් පළ විය.
- රැකියා තෘප්ති මට්ටම් කෙරෙහි ස්ත්‍රී-පුරුෂභාවය, වයස, විවාහක-අවිවාහක බව, අධ්‍යාපන හා වෘත්තීය සුදුසුකම් මෙන් ම පාසල් වර්ගය යන විචල්‍ය මගින් වෙසෙසි බලපෑමක් ඇති නොකෙරන නමුත් සේවා කාලය, වර්තමාන පාසලේ සේවා කාලය, උගන්වන විෂයය මගින් වෙසෙසි බලපෑමක් ඇති කෙරේ.
- හර විෂයයන් උගන්වන ගුරුවරුන්ගෙන් ගණිතය හා විද්‍යා විෂයයන්ට සාපේක්ෂ ව බුද්ධ ධර්මය හා සිංහල යන විෂයයන් කෙරෙහි ඉහළ තෘප්තියක් පෙන්වන අතර, ඉතිහාසය විෂයය සඳහා අවම තෘප්තියක් පළ විය.
- අධ්‍යයනයේ දී යොදා ගත් න්‍යායාත්මක පදනම සංඛ්‍යාත්මකව 61%කින් යෝග්‍ය බව අනාවරණය විය. ඒ අනුව ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියෙන් අනාවරණය නොවන සාධක ද තිබිය හැකි ය.
- ත්‍රිත්ව-ක්ෂේත්‍ර ආකෘතියට අනුව ඩින්හැම් සහ ස්කොට් (1998) ඉදිරිපත් කළ ගුරුවරුන්ගේ රැකියා තෘප්තිය හඳුනා ගැනීම සඳහා වෙනත් රටවල යොදා ගනු ලැබූ ප්‍රශ්නාවලිය කෙරෙහි සංදර්භමය සාධකවල බලපෑමක් තිබිය හැකි බැවින් සංස්කරණය කළ යුතු ය.

නිගමන හා යෝජනා

(1) ගුරු ආකල්ප හා කුසලතා සංවර්ධනය

ගුරුවරුන් සිසුන්ගේ සමස්ත සංවර්ධනයට දායක වීමෙන් ඉහළ රැකියා තෘප්තියක් ලබන අතර, විදුහල්පති ඇතුළු පාසල් පරිපාලනයෙන් ලබා දෙන සහයෝගය තෘප්තිය වර්ධනයට හේතු වන නිසා ගුරුවරුන් තුළ ධනාත්මක ආකල්ප සංවර්ධනයට පාසල් මට්ටමින් මෙන් ම ගුරු පුහුණු වැඩසටහන්වල දී ද පියවර ගත යුතු වේ. පාසල තුළ යහපත් ධනාත්මක අන්තර් සම්බන්ධතා පවත්වා ගැනීමට හැකි වන අයුරින් අන්තර් පුද්ගල කුසලතා සංවර්ධනය කිරීමට ද විදුහල්පතිවරුන් පියවර ගත යුතු වේ.

(2) ඉටු කිරීමට පැවරී ඇති කාර්යභාරය ඉහළ යෑම

ගුරුවරුන්ගේ අතෘප්තිය වැඩි කිරීමට පාසලේ ඉටු කිරීමට පැවරී ඇති කාර්යභාරය ඉහළ යෑම හේතු වන නිසා ද, ගුරුවරුන් අවබෝධ කර ගෙන ඇති ආකාරයට ඇගයීම් කටයුතුවල දී ලිපිගොනු නඩත්තු කිරීමට මෙන් ම ලිපි කටයුතු ඉහළ ගොස් ඇති නිසා ද හා පාසල් මට්ටමින් ලිඛිත කාර්ය ඉහළ යෑම වැළැක්වීමට අනධ්‍යයන කාර්ය මණ්ඩලයේ හා පරිපාලනයට සම්බන්ධ ගුරුවරුන්ගේ සහාය ගුරුවරුන්ට ලබාදීම කෙරෙහි පාසල් පරිපාලකයින්ගේ අවධානය යොමු විය යුතු වේ.

(3) පාසලේ කීර්තිනාමය, ගුරුවරයාගේ සමාජ තත්ත්වය

ගුරුවරුන් පාසලේ කීර්තිනාමය, ගුරුවරයාගේ සමාජ තත්ත්වය පිළිබඳ තෘප්තිමත් නොවන නිසා ද, දෙමාපිය සමාජය විසින් ගුරු කාර්යභාරය සංජානනය කරන ආකාරය පාසලේ කීර්තිනාමය අනුව වෙනස් වෙන නිසා ද, ජාතික පාසල්, ජනප්‍රිය පාසල් වැනි වර්ගීකරණ ඉවත් කර ප්‍රාථමික, කණිෂ්ඨ හා ජ්‍යෙෂ්ඨ ලෙස කරනු ලබන වර්ගීකරණයක් යෝජනා කෙරේ. එසේ ම ගුරුවරුන්ගේ අධ්‍යාපන මට්ටමට ගැළපෙන වැටුපක් ලබා දීම හා ජීවන වියදමට සරිලන වැටුප් වර්ධකවල වර්ධනයක් වාර්ෂික ව ලබා දීමෙන් ගුරුවරයාගේ සමාජ තත්ත්වය ඉහළ නැංවීමට අධ්‍යාපන අමාත්‍යාංශ ඉහළ නිලධාරීන්ගේ අවධානය යොමු විය යුතු වේ.

(4) ගුරු වෘත්තීය සංවර්ධනය

ගුරුවරුන්ගේ රැකියා තෘප්තිය කෙරෙහි වර්තමානයේ ක්‍රියාත්මක වන වෘත්තීය සංවර්ධන ක්‍රියා මාර්ග පිළිබඳ අතෘප්තිය ද ගුරු පුහුණු සැසි ක්‍රියාත්මක වන ආකාරය හා සේවාස්ථ සැසිවලින් ගුරු වෘත්තීය සංවර්ධනයට ලැබෙන පිටුබලය අල්ප බව ද ගුරුවරුන්ගෙත් අදහස්වලින් ඉදිරිපත් වන නිසා නිර්මාණකවාදය පදනම් කරගත් 5-E සංකල්පයට අනුව ඉගැන්වීම් ක්‍රම හඳුන්වා දීමේ දී එම න්‍යායික අවබෝධය මෙන් ම නිර්මාණකවාදී පංති කාමර ගොඩනැංවීම සඳහා අවශ්‍ය වන ඉගැන්වීම් සැලසුම් කිරීම, පංති කාමර කළමනාකරණය, සිසුන් ඇගයීම හා ප්‍රතිපෝෂණ ලබාදීම පිළිබඳ මනා අවබෝධයක් හා කුසලතා ගුරුවරුන්ට ලබා දිය යුතු වේ. එහි ප්‍රධාන අරමුණක් වන්නේ ද ඉගෙනුම්-ඉගැන්වීම් ක්‍රියාවලිය අතරතුර දී ම අඟයමින් අවශ්‍ය ප්‍රතිපෝෂණ ලබා දීමෙන් ශිෂ්‍යයාගේ අවබෝධය වැඩි දියුණු කිරීමයි. එසේ ම සම්භවන ඇගයීම් පිළිබඳ මූලධර්ම හා කුසලතා ගුරුවරුන් තුළ සංවර්ධනය කළ යුතු වේ. ඒ සඳහා පාසල් මට්ටමෙන් ගුරු සංවර්ධනය (SBTD) සඳහා පියවර ගැනීමට විදුහල්පතිවරුන් ඇතුළු පාසල් පරිපාලනයට සම්බන්ධ පුද්ගලයින්ගේ අවධානය යොමු කළ යුතු ය. තව ද, පංති මට්ටමෙන් ඇති වන ගැටලුවලට විසඳුම් සොයා ගැනීමට, ක්‍රියා මූලික පර්යේෂණ කුසලතා වැඩි දියුණු කර ගැනීමට, ගුරුවරුන්ට අත්වැලක් ලබා දීමට අධ්‍යාපන අමාත්‍යාංශ මට්ටමින් පියවර ගැනීම අවශ්‍ය වේ.

(5) විදුහල්පතිවරුන්ගේ නායකත්ව කුසලතා සංවර්ධනය

විදුහල්පතිවරුන්ගේ නායකත්ව කුසලතා වර්ධනය කර ගැනීම වැදගත් වන බව බහුතරයක් ගුරුවරුන්ගෙන් ප්‍රකාශ විය. එහිදී විදුහල්පතිවරුන්ගේ සහභාගිත්ව හෝ උපදේශන නායකත්ව භූමිකාව ගුරු ඇගයීමට පාත්‍ර වන බව ඔවුන්ගේ ප්‍රතිචාරවලින් පැහැදිලි විය. පාසලේ යටිතල පහසුකම් සංවර්ධනයට පියවර ගැනීම මෙන් ම පාසලේ දෛනික කටයුතු කෙරෙහි ඇති බාධා මග හැරීමට ද පියවර ගත යුතු වේ. එසේ ම එක් එක් ගුරුවරයාගේ හැකියා, ළැදියා හා අවශ්‍යතා පිළිබඳ පුළුල් අවබෝධයක් ලබා ගනිමින් ඔවුන්ගේ දායකත්වය පාසලේ දියුණුවට යොදා ගැනීම කෙරෙහි පාසල් පරිපාලනයේ අවධානය යොමු විය යුතු වේ. එසේ ම නායකත්ව කුසලතා වර්ධනයට ද ගුරුවරුන්ට අවස්ථා ලබා දීමේ අවශ්‍යතාව හඳුනා ගැනිණි. ඒ අනුව දේශපාලනීකරණයෙන් තොර ව විදුහල්පතිවරුන් බඳවා ගැනීම, පුහුණු කිරීම, විදේශීය සංචාර ලබා දිය යුතු අතර විදුහල්පතිවරුන්ට පාසල් කළමනාකරණය පිළිබඳ විධිමත් පුහුණුවක් ලබා දිය යුතු වේ.

(6) අධ්‍යාපනය දේශපාලනීකරණය වීම වැළැක්වීම

පත්වීම් ලබා දීම, ස්ථානගත කිරීම, උසස්වීම් ලබා දීම, මාරුවීම් ලබා දීම මෙන් ම ශිෂ්‍යත්ව පිරිනැමීම යන සියලු අංශ දේශපාලනීකරණය වීමෙන් ගුරුවරුන්ගේ රැකියා තෘප්තිය පහළ ගොස් ඇත. දක්ෂතා පදනම මත උසස්වීම් ලබා දීමේ ක්‍රමවේදයක අවශ්‍යතාව පවති. වෛද්‍යවරුන් වැනි අනෙකුත් රාජ්‍ය සේවකයින්ට මෙන් වසර 5න් 5ට හෝ 8න් 8ට ක්‍රියාත්මකවන නිශ්චිත ගුරු මාරු ප්‍රතිපත්තියක් අනුගමනය කිරීම අවශ්‍ය වේ. එසේ ම ගුරුමාරු මණ්ඩලවලට නෛතික බලතල ලබා දීමේ අවශ්‍යතාව මෙන් ම දුෂ්කර සේවයේ නිරත ගුරුවරුන්ට ප්‍රමාණවත් දිරි දීමනා ලබා දීමේ අවශ්‍යතාව ද යෝජනා කෙරේ.

(7) අධ්‍යාපන ප්‍රතිසංස්කරණ ක්‍රියාත්මක කෙරෙන ආකාරය

රාජ්‍ය මට්ටමෙන් නව අධ්‍යාපන ප්‍රතිසංස්කරණ ක්‍රියාත්මක කෙරෙන ආකාරය පිළිබඳ ගුරුවරුන්ගේ දැඩි අතෘප්තිය පළ විය. පංති කාමරයට ප්‍රතිසංස්කරණ ගෙන යන ගුරුවරයා පළමු ව මනා ලෙස දැනුවත් කළ යුතු වේ. ඒ සඳහා ග්‍රිෆින් (Griffin, 1999) ඉදිරිපත් කර ඇති Cascade model භාවිතයෙන් ගුරුවරුන් පුහුණු කළ හැකි ය. එනම් එක් සංකල්පයක් හෝ මාතෘකාවක් පිළිබඳ පුහුණු කරන ලද ගුරුවරුන් යොදා ගනිමින් ඊළඟ පරපුරට අයත් ගුරුවරුන් පුහුණු කළ හැකි ය. මෙලෙස ප්‍රතිසංස්කරණ පිළිබඳ අදාළ සියලු ගුරුවරුන් පුහුණු කිරීමට ක්‍රමවේදයක් සකස් කළ හැකි ය. තවදුරටත් ඔවුන්ට අවශ්‍ය මග පෙන්වීම් ලබා දීමට සරල බසින් ලියැවුණු පොත පත හා ගුරු මාර්ගෝපදේශ සංග්‍රහ අදාළ සෑම ගුරුවරයකුට ම නිසි වෙලාවට ලබා දිය යුතු අතර, මනා ලෙස ගුරුවරුන් පුහුණු කිරීම ද අවශ්‍ය වේ. පාසල් මට්ටමෙන් ගුරු සංවර්ධන සංකල්පය පාසල්වලට මෑතක දී හඳුන්වා දී ඇතත් පාසල්වල ප්‍රමාණවත් ලෙස ක්‍රියාත්මක නොවන නිසා පුහුණුව ලබන ගුරුවරයා මගින් අනිකුත් ගුරුවරුන් දැනුවත් නොවේ. ඒ සඳහා අධ්‍යාපන අමාත්‍යාංශ නිලධාරීන්, පළාත් අධ්‍යාපන අධ්‍යක්ෂවරුන්, කලාප අධ්‍යාපන අධ්‍යක්ෂවරුන්, විෂය අධ්‍යක්ෂවරුන් මෙන් ම ගුරු පුහුණු වැඩසටහන් ක්‍රියත්මක කරන නිලධාරීන්ගේ ද අවධානය යොමු විය යුතු ය.

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පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව විභාගයේ අනාගත සූචක වලංගුතාව

කේ. ඒ. ඒ. ඩී. නිමල් ප්‍රේමසිරි,
පු/ඉහළ තම්මන ක. වි.,
කුමාර කට්ටුව.

සංක්ෂිප්තය

පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව විභාගය අධ්‍යාපන අමාත්‍යංශයේ නිලධාරීන්, රාජ්‍ය නොවන සංවිධාන, දෙමාපියන්, උපකාරක පන්ති පවත්වන ගුරුවරුන්, විද්‍යුත් හා මුද්‍රිත මාධ්‍යවල අවධානය යොමු වූ විභාගයකි. මේ සඳහා දෙමව්පියෝ මුදල් වියදම් කරන අතර දරුවන් ද වෙහෙසට පත් කරවති. මේ පදනම මත පස්වන ශ්‍රේණියේ ශිෂ්‍යත්වලාභීන්ගේ අනාගත සූචක වලංගුතාව කෙසේ ද, ඔවුන්ගේ හා දෙමව්පියන්ගේ බලාපොරොත්තු කොතෙක් දුරට ඉටු වී ඇත් ද යනු සොයා බැලීම පර්යේෂණ අභිමතාර්ථ විය. 1991 හා 1992 වර්ෂවල ශිෂ්‍යත්වලාභීන් 40කු නියැදිය විය. දත්ත රැස්කිරීම සඳහා ප්‍රශ්නාවලි හා සම්මුඛ සාකච්ඡා යොදා ගැනුණ. ශිෂ්‍යත්වලාභීන්ගෙන් 39ක් අ. පො. ස. සාමාන්‍ය පෙළ විභාගය සමත් වූහ. අ. පො. ස. උසස් පෙළ ප්‍රතිඵලවලින් 34කු සමත් වුවත්, විශ්ව විද්‍යාලයට ඇතුළත් වීමට 17කු පමණක් සමත් විය. පදිංචි ස්ථානයේ සිට කිලෝ මීටර 50ත් 100ත් අතර ඇති දුර බැහැර පාසල්වල ඉගෙනුම ලැබූ ශිෂ්‍යත්වලාභීන්ට ඉගෙනීමට අධික වියදමක් දැරීම, ගමන් විඩාව, විෂයය ධාරා තෝරා ගැනීම යන විවිධ හේතු සාධක නිසා අධ්‍යාපන කටයුතු අඩාල වීමෙන් ඔවුන් බලාපොරොත්තු වූ ප්‍රතිඵල ලබා ගැනීමට නොහැකි විය.

හැටලුව හැඳින්වීම

නිදහස් අධ්‍යාපන ක්‍රමය ක්‍රියාත්මක වූ 1944 වර්ෂයෙහි සිට අධ්‍යාපනයෙහි තිබූ විෂමතා හා ප්‍රාදේශීය අසමබරතා සමනය කරනු වස් නොයෙකුත් පියවර අධ්‍යාපන අමාත්‍යංශය විසින් වරින් වර ගෙන තිබේ. නොමිලයේ අධ්‍යාපනය සැපයීම, ස්වභාෂා මාධ්‍යයෙන් ඉගැන්වීම, ශිෂ්‍යත්ව ප්‍රදානය, නොමිලයේ පොත් ලබාදීම ඒ ප්‍රශස්ථ මාර්ගවලින් සමහරකි. මෙම ක්‍රියා මාර්ග එදා මෙදා තුර සතුටුදායක මට්ටමින් ක්‍රියාත්මක වී තිබෙන අතර සිසුන්ට ශිෂ්‍යත්ව ප්‍රදානය සඳහා විධිමත් පාසල් පද්ධතිය තුළ විවිධ මට්ටම්වල දී ශිෂ්‍යත්ව පරීක්ෂණ භාවිත කර ඇත.

20වෙනි සියවසේ සිව්වන දශකයේ දී අධිරාජ්‍ය පාලනය, භාෂා මාධ්‍ය, පන්ති බලපෑම වැනි හේතු නිසා අධ්‍යාපන ක්ෂේත්‍රය තුළ දක්නට ලැබුණු ඌනතා තරමක් දුරට හෝ මඟ හරවා ගැනීම සඳහා අධ්‍යාපන සම අවස්ථා සැපයීමේ මාර්ගයක් වශයෙන් පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව පරීක්ෂණය යොදා ගැනීමට රාජ්‍ය මන්ත්‍රණ සභාවේ අධ්‍යාපනය පිළිබඳ කාරක සභාව ක්‍රියා කර ඇත. ඒ අනුව පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව ප්‍රදානය සඳහා සුදුසු සිසුන් තේරීම පිණිස වාර්ෂික ව පැවැත්වෙන විභාගය ආරම්භ විය (Sessional Paper, 1943).

ඉහළ අභියෝගතාවකින් යුතු සිසුන් තෝරා ගෙන අඩු ආදායම් සහිත පවුල්වල ළමයින්ට මුදල් ආධාර හා 1AB විද්‍යාල ලබා දීමත්, වැඩි ආදායම් සහිත පවුල්වල ළමයින්ට 1AB විද්‍යාල පමණක් ලබා දීමත් මගින් අධ්‍යාපන අවස්ථා සැපයීම නූතන පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව පරීක්ෂණය පැවැත්වීමේ අරමුණු වී තිබේ. ඒ අනුව තරග විභාගයක ස්වරූපයෙන් පවත්වන ශිෂ්‍යත්ව පරීක්ෂණයේ එක් එක් දිස්ත්‍රික්කවලට අයත් කඩඉම් ලකුණු විභාග දෙපාර්තමේන්තුව

විසින් ප්‍රකාශයට පත් කෙරේ. එම කඩඉම් ලකුණු අනුව සමත් වන ළමයින් ශිෂ්‍යත්ව ප්‍රදානය සඳහා තෝරා ගැනීම, ඔවුන්ගේ අනාගත අධ්‍යාපනික සාධනයේ සාර්ථකත්වය පිළිබඳ අනාවැකි කීමක් ලෙස ද හැඳින්විය හැකි ය.

සංවර්ධනය වෙමින් පවතින අනිකුත් රටවලට මෙන්ම ශ්‍රී ලංකාවට ද අද හදිසි අවශ්‍යතාවක් වී තිබෙන්නේ එම වේගවත් සංවර්ධනයට උරදීමට සමත් තාක්ෂණික විද්‍යාත්මක සහ ගණිතමය ක්ෂේත්‍රයන්හි ව්‍යාප්ත දැනුම් සම්භාරයකින් සන්නද්ධ වූ පරම්පරාවකි. පාසල් අධ්‍යාපන ක්‍රියාවලිය තුළ ජාතික මට්ටමින් කෙරෙන මුල් ම තේරීම සඳහා යොදා ගැනෙන පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව පරීක්ෂණය එවැනි පිරිසක් බිහි කිරීම පිණිස අවශ්‍ය වූ උසස් අධ්‍යාපනයට දොර විවෘත කරන යතුරක් වශයෙන් හඳුන්වා දිය හැකි ය. මෙම ප්‍රතිඵල අනුව වාර්ෂික ව විශාල සිසුන් පිරිසකට ද්විතීයික අධ්‍යාපනය සඳහා පහසුකම් සලසා එම පහසුකම් උසස් අධ්‍යාපනය නිම කිරීම දක්වා තවදුරටත් ව්‍යාප්ත කිරීම ඉතා වැදගත් වේ.

සම්පත් හිඟය නිසා ශ්‍රී ලංකාවේ පාසල් වැඩි කොටසක ද්විතීයික මට්ටමින් විද්‍යාත්මක සහ තාක්ෂණික අධ්‍යාපනයක් දීමට පහසුකම් නැත. එම නිසා එවැනි පහසුකම් ඇති නගරබද ජනප්‍රිය විද්‍යාල සහ පැරණි මධ්‍ය මහා විද්‍යාල වශයෙන් හඳුන්වනු ලබන පාසල් අතළොස්සකට පමණක් පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව පරීක්ෂණයෙන් තෝරා ගනු ලබන සිසුන් ඇතුළත් කරනු ලැබේ. ඉහළ අභියෝගතාවකින් යුතු සිසු පිරිසක් ලෙස සලකා තෝරා ගනු ලබන මෙම පිරිස හිමි කර ගෙන සිටින දක්ෂතා තව තවත් උද්දීපනය කර එයින් ජාතියට ලැබිය හැකි ප්‍රයෝජන උපරිම අන්දමින් ලබා දීමට සහාය වීම ජාතික අධ්‍යාපන ක්‍රමය මගින් ඉටුවිය යුතු ජාතික කර්තව්‍යවයකි.

1944 වර්ෂයේ සිට ශිෂ්‍යත්වයක් ලැබීම සඳහා සම්පූර්ණ විය යුතු කොන්දේසි තුනක් විය. එනම්,

(1) මධ්‍ය මහා විද්‍යාල පිහිටි ප්‍රදේශයේ පාසලක ඉගෙනුම ලැබීම,
(2) මධ්‍ය මහා විද්‍යාල ප්‍රාථමික අංශයේ ඉගෙනුම ලැබීම,
(3) දෙමාපියන්ගේ වාර්ෂික ආදායම රුපියල් 600ට අඩු වීම ය.

මෙසේ ඉදිරිපත් කර ඇති කොන්දේසිවලින් පැහැදිලි වන්නේ උසස් අධ්‍යාපනික ඉඩ ප්‍රස්තා අහිමි වී ඇති පිටිසර අඩු ආදායම් ලබන පවුල්වල දක්ෂ දරුවන්ට උසස් අධ්‍යාපනික අවස්ථා ලබා දීමට අපේක්ෂා කර ඇති බවය. එසේ තෝරා ගනු ලබන දුප්පත් ශිෂ්‍යත්වධාරීන් හැම දෙනාගේ ම ඉඳුම් හිටුම් සැපයීම, පොත් පත් ආදී සෑම දෙයක් ම රජයෙන් නොමිලයේ සැපයීමට පියවර ගෙන ඇත. (Administrative Report, 1943: A5)

1944 වර්ෂයේ සිට ශිෂ්‍යත්වධාරීන්ගෙන් ඉඳුම් හිටුම්, කෑම බීම, ඇඳුම් පැළඳුම්, පොත් පත් රජය මගින් නොමිලේ සැපයු නමුත් වර්තමානය වන විට එම නොමිලේ දීමනා ක්‍රමයෙන් අඩු වී ගිය අතර පසුව අඩු ආදායම් ලබන දෙමාපියන්ගේ දරුවන්ට නැත හොත් මුදල් ආධාර සහිතව ශිෂ්‍යත්ව ලැබූවන්ට පමණක් මසකට රුපියල් 500ක ආධාර මුදලක ගෙවීම් ක්‍රමයක් ආරම්භ විය. මුදල් ආධාර රහිත ශිෂ්‍යත්ව දීනා ගැනීමේ ප්‍රතිලාභ වශයෙන් නගරයේ ජනප්‍රිය විදුහලකට ඇතුළු වීමේ දොරටුව ඒ මගින් විවෘත විය. අද එය ශිෂ්‍යත්ව ප්‍රදානය සඳහා තෝරා ගන්නා පරීක්ෂණයකට වඩා ජනප්‍රිය පාසල්වලට සිසුන් තෝරා ගන්නා පරීක්ෂණයක තත්ත්වයකට පත්වී තිබේ. (ව්‍යවස්ථාව, 1981)

ශිෂ්‍යත්වලාභීන්ට දෙන ආර්ථික ආධාර අඩු වී ගොස් ඇති නමුත් එම පරීක්ෂණය සඳහා ඇති ඉල්ලුම දිනෙන් දින වර්ධනය වී තිබේ. මෑත කාලයේ සිට පස් වන ශ්‍රේණියේ ශිෂ්‍යත්ව පරීක්ෂණයට ඉගැන්වීමේ ආධාරක පන්ති හෙවත් ටියුෂන් පන්ති ආරම්භ කර ඇත්තේ මේ

ඉල්ලුම නිසා ය. මෙවැනි ප්‍රවණතාවකට ප්‍රධාන හේතුව වී තිබෙන්නේ ජනප්‍රිය විද්‍යාලයකට ඇතුළු වීමේ දොරටුව ශිෂ්‍යත්ව පරීක්ෂණ මගින් විවෘත කර ගැනීම මිස මුදල් ආධාර හෝ වෙනත් වාසියක් ලැබීම නොවෙයි. "V ශ්‍රේණියේ ශිෂ්‍යත්ව ප්‍රදානය කිරීමේ පරීක්ෂණය" යන මෙතෙක් භාවිත වූ නම පවා වෙනස් කර "පාසල්වලට සිසුන් තෝරා ගැනීම සහ ශිෂ්‍යාධාර ප්‍රදානය කිරීම සඳහා පැවැත්වෙන V ශ්‍රේණියේ ශිෂ්‍යත්ව විභාගය" යනුවෙන් නැවත නම් කර තිබේ (ව්‍යවස්ථාව, 1981).

විධිමත් පාසල් පද්ධතිය තුළ කෙරෙන සැබෑ දක්ෂයින් තේරීමේ මුල් ම පරීක්ෂණය මෙය වන බැවින් ද, මෙම තේරීම සඳහා භාවිත කරන මිනුම් උපකරණයට හිමි වන්නේ අති විශේෂ වැදගත්කමකි. එනම් ජාතික සංවර්ධනාභිමුඛ එළඹුමකින් සිදු කරන මෙම පෙරකීමේ සාර්ථකත්වය රඳා පවතින්නේ ඒ සඳහා යොදා ගන්නා මිනුම් උපකරණයේ කාර්යක්ෂමතාව මතය. පස් වන ශ්‍රේණිය ශිෂ්‍යත්ව පරීක්ෂණයේ කාර්යභාරය ගැන දෙමාපියන් සහ අධ්‍යාපනයට සම්බන්ධ නිලධාරීන් සෑහෙන කාලයක සිට විතරම් විශ්වාසයක් තබා නැති බවට කරුණු ඉදිරිපත් වී ඇත. එසේ ම තරගකාරී විභාගයකින් මෙසේ ශිෂ්‍යයින් හඳුනා ගැනෙන්නේ එකී ලාබාල ශිෂ්‍යයින්ගේ වයස සුදුසු අවස්ථාවල දී ද යන්න සැක පහළ වේ. පවත්වනු ලබන පරීක්ෂණය දරුවාට ඉතාමත් උචිත පරීක්ෂණයක් දැයි තවත් ප්‍රශ්නයක් මතු වෙයි (ජාතික කොමිෂන් සභා වාර්තාව, 1992).

සාහිත්‍ය විමර්ශනය

නවරත්න (1978) 1966, 1973 හා 1974 යන අවුරුදුවල ශිෂ්‍යත්වලාභීන්ගෙන් 200ට වැඩි කණ්ඩායම් තුනක් පර්යේෂණ නියැදිය ලෙස යොදා ගෙන, ශිෂ්‍යත්ව පරීක්ෂණයේ අනාගත සූචක වලංගුතා විශ්ලේෂණයේ දී අනාවරණය වී ඇත්තේ පරීක්ෂණයේ පෙර කීමේ හැකියාව, ප්‍රශ්න පත්‍රවල කාර්යක්ෂමතාව හා ප්‍රශ්න පත්‍රවල විෂය මූලික වලංගුතාව ප්‍රශස්ත මට්ටමක නැති බව ය.

වර්ණකුලසූරිය (1982) නිකවැරටිය අධ්‍යාපන කලාපයේ පස්වන ශ්‍රේණියේ ශිෂ්‍යත්වලාභීන් පිළිබඳ වූ අධ්‍යයනයක නිරත වී සමාජ ආර්ථික පසුබිම සාධනය කෙරෙහි බලපාන්නේ කෙසේ දැයි විමසන ලදී. 1981 දී නිකවැරටිය අධ්‍යාපන ප්‍රදේශයේ පස්වන ශ්‍රේණියේ ශිෂ්‍යත්වලාභීන් අතරින් අහඹු ලෙස තෝරා ගත් සිසුන් 381ක් දෙනෙකු පර්යේෂණ නියැදිය ලෙස යොදා ගෙන ඇත. මෙහි දී දත්ත විශ්ලේෂණයෙන් අනාවරණය කර ගෙන ඇත්තේ හොඳ සමාජ පසුබිමක් සහිත ළමයින් ශිෂ්‍යත්වධාරීන් අතර වැඩි බවත්, දෙමාපිය අධ්‍යාපන තත්ත්වය ශිෂ්‍ය සාධනය කෙරෙහි බලපා ඇති බව සහ තේරීම් සඳහා අභියෝග්‍යතා පරීක්ෂණයේ බලපෑමක් ඇති බවත් ය.

ගුණපාල (1983) පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව පරීක්ෂණයෙහි අනාගත සූචක වලංගුතාව විමසා බැලීම අරමුණු කොට ගත් පර්යේෂණාත්මක අධ්‍යයනය සඳහා නියැදිය තෝරා ගෙන ඇත්තේ මහනුවර ජනප්‍රිය බාලිකා පාසල් තුනක් හා පිරිමි පාසල් තුනක් ය. පාසල් හයෙන් ගැහැනු පිරිමි සහ ග්‍රාමීය නාගරික යන විචල්‍ය නියෝජනය වන පරිදි 1975, 1976 සහ 1977 යන වර්ෂවල ශිෂ්‍යත්ව පරීක්ෂණයට පෙනී සිටි සිසුන් අතරින් 720 දෙනෙකු මුළු නියැදියට ඇතුළු කර ගෙන ඇත. පර්යේෂණය පදනම් කර ගත් අනාගත සූචකය ලෙස යොදා ගෙන ඇත්තේ නියැදි සිසුන් ශිෂ්‍යත්ව පරීක්ෂණයෙන් ලද සාධන මට්ටමයි. එම සිසුන් අ. පො. ස. (සා. පෙ.) පරීක්ෂණයෙන් ලද ලකුණු නිර්ණායක මට්ටම් ලෙස යොදා ගෙන පර්යේෂණය කර ඇත. නිර්ණායක සාධන ලකුණත් අනාගත සූචකයට ලද ලකුණත් අතර සහසම්බන්ධතාව ගණනය කර විශ්ලේෂණය කර ඇත. ඒ ආශ්‍රිත පර්යේෂණ අනාවරණ වී ඇත්තේ මෙම ශිෂ්‍යත්ව පරීක්ෂණයෙන් දක්ෂතාව තරමක් මැනුනත්, අනාගත සූචකය ඉහළ

නැති බවත්, සමත්වීම කෙරෙහි ග්‍රාමීය හා නාගරික බව බලපෑමක් ඇති බවත්, ස්ත්‍රී හා පුරුෂ අනුව බල නොපාන බවත්, තේරෙන සිසුන් සැබෑ දක්ෂයින් ම නොවන අතර අසමතුන් අතර ද දක්ෂයන් සිටින බවත් පැහැදිලි වී ඇත.

පර්යේෂණ ක්‍රමවේදය

විස්තරාත්මක අධ්‍යයන ක්‍රමය යටතේ ප්‍රශ්නාවලි හා සම්මුඛ සාකච්ඡා පර්යේෂණ උපකරණ ලෙස යොදා ගැනුණි.

අරමුණු

1944 වර්ෂයේ සිට වර්තමානය දක්වා පස්වන ශ්‍රේණියේ ශිෂ්‍යත්ව විභාගයේ ස්වභාවය හඳුනා ගැනීම හා ශිෂ්‍යත්වලාභීන්ගේ අනාගත සූචක වලංගුතාව කෙසේ ද යන්න සොයා බැලීම.

නියැදිය

කුලියාපිටිය අධ්‍යාපන කලාපයට අයත් ජාතික පාසලක 1990 වර්ෂයේ ශිෂ්‍යත්ව විභාගය සමත් සිසුන් 23 ගෙන් ශිෂ්‍යත්වලාභීන් 20ක් ද 1991 වර්ෂයේ ශිෂ්‍යත්ව විභාගය සමත් සිසුන් 28 ගෙන් ශිෂ්‍යත්වලාභීන් 20ක් වශයෙන් ශිෂ්‍යත්වලාභීන් 40ක් නියැදිය වශයෙන් යොදා ගැනුණ. එහි දී ශිෂ්‍යත්වලාභීන්ගෙන් 18ක් ස්ත්‍රී වූ අතර 22ක් පිරිමි විය. ශිෂ්‍යත්වලාභීන් වර්තමානයේ ජීවත්වන නිවෙස්වලට ගොස් ප්‍රශ්නාවලි හා සම්මුඛ සාකච්ඡා මගින් දත්ත රැස් කරන ලදි. එසේ ම දත්ත රැස් කිරීමේ දී ශිෂ්‍යත්වලාභීන් 10ක් ගෙන් පමණක් සෘජු තොරතුරු ලබා ගත් අතර ඉතිරි ශිෂ්‍යත්වලාභීන් 30 දෙනාගේ තොරතුරු ඒ මොහොතේ ඔවුන් නිවෙස්වල රැඳී නොසිටි බැවින් ඔවුන්ගේ දෙමව්පියන් හා වැඩිහිටියන් ගෙන් ලබා ගන්නා ලදී.

පර්යේෂණ අනාවරණ

ශිෂ්‍යත්වලාභීන් හතළිස් දෙනාගෙන් 39ක් සාමාන්‍ය පෙළ විභාගය සමත් වී තිබුණි. එක් ශිෂ්‍යත්වලාභියකු ඔහුගේ මව සහ පියා අතර ඇති වූ පවුල් ආරවුලක් නිසා මෙතෙක් පැවති යහපත් පවුල් පරිසරය හා ඉගෙනුම් පරිසරය බිඳ වැටීමේ ප්‍රතිඵලයක් ලෙස ඔහුගේ අධ්‍යාපන කටයුතු පිළිබඳ සොයා බැලීමට වගකිව යුතු පුද්ගලයකු නොමැති වීමෙන් සාමාන්‍ය පෙළ විභාගයට ඉදිරිපත් වී නොතිබුණි. වර්තමානයේ ඔහු වඩු කාර්මිකයකු ලෙස රැකියාව කරමින් තම කිරි අම්මා සමග ජීවත් වෙයි.

ශිෂ්‍යත්වලාභීන්ගෙන් දහ දෙනෙකුගේ දෙමව්පියන් රැකියාව වශයෙන් ගුරු වෘත්තියේ යෙදී තිබුණි. එම ශිෂ්‍යත්වලාභීන් දහ දෙනා ම විශ්වවිද්‍යාල වරම් හිමි කර ගැනීම විශේෂත්වයක් විය.

ශිෂ්‍යත්වලාභීන් පස් දෙනෙකුගේ දෙමව්පියන් වෙනත් රජයේ රැකියාවල නිරත විය. ඔවුන්ගෙන් එක් ශිෂ්‍යත්වලාභියෙක් පමණක් විශ්ව විද්‍යාල වරම් හිමි කර ගෙන තිබුණි.

ඉතිරි ශිෂ්‍යත්වලාභීන් විසි පස් දෙනා අඩු ආදායම් පවුල්වල දරුවන් විය. ඔවුන්ගෙන් හය දෙනෙක් පමණක් විශ්වවිද්‍යාල වරම් හිමි කර ගෙන තිබුණ.

සාමාන්‍ය පෙළ විභාගය සමත් තිස් නව දෙනාගෙන් 34ක් උසස් පෙළ විභාගය සමත් වුවත් 17ක් පමණක් විශ්ව විද්‍යාලයට ඇතුළත් වීමට සුදුසුකම් ලබා තිබුණි. එහි දී විද්‍යා අංශයෙන් සිසුන් 04ක් ද, ගණිත අංශයෙන් සිසුන් 06ක් ද, වාණිජ අංශයෙන් සිසුන් 04ක් ද කලා අංශයෙන් සිසුන් 03ක් ද විශ්ව විද්‍යාල වරම් හිමි කර ගෙන තිබුණි. වය 1 වන වගුවෙන් දැක්වේ.

1 වන වගුව - **උසස් පෙළ විෂය ධාරා අනුව විශ්වවිද්‍යාලයට අතුළත් වූ සිසුන්**

විෂය ධාරාව	සිසුන් ගණන	උ:පෙ: සමත් සිසුන් ගණන	විශ්වවිද්‍යා: ඇතුළත් වූ සිසුන් ගණන
විද්‍යා අංශය	12	10	04
ගණිත අංශය	09	08	06
වාණිජ අංශය	10	09	04
කලා අංශය	08	07	03
එකතුව	39	34	17

දෙමව්පියන් සමඟ පැවැත්වූ සම්මුඛ සාකච්ඡාවේ දී නගරයේ ජනප්‍රිය පාසලකට තම දරුවා ඇතුළත් කිරීමට හේතුව වශයෙන්, ප්‍රදේශයේ ශිෂ්‍යත්වය සමත් තවත් ළමයින් එම පාසල්වලට යන නිසාත්, දරුවාට හොඳ අධ්‍යාපනයක් ලබා දීමටත් තමාගේ දරුවා ද එම පාසල්වලට ඇතුළත් කළ බව දෙමාපියන්ගෙන් භාගයක් ප්‍රකාශ කරන ලදී.

ශිෂ්‍යත්වලාභීන්ගෙන් 10ක් දෙමව්පියන් හා පවුලේ වැඩිහිටියන්ගේ අවශ්‍යතාවලට උසස් පෙළ විෂය තෝරා ගත් බව ඔවුන් සමඟ පැවැත් වූ සම්මුඛ සාකච්ඡාවේ දී අනාවරණය විය. එම නිසා විද්‍යා හා ගණිත අංශවලින් උසස් පෙළ හැදෑරූ බවත් එහි දී තම ඉලක්කවලට යාමට නොහැකි වූ බවත් ඔවුහු ප්‍රකාශ කළහ. එසේ ම දෙමාපියන්ගේ බලපෑම මත එක් ශිෂ්‍යත්වලාභීනියක් විද්‍යා විෂය හදාරා උසස් පෙළ විභාගය පළමු අවස්ථාවේ දී අසමත් විය. ඉන් පසු තමන් නැවත කලා අංශයෙන් උසස් පෙළ හදාරා විශ්වවිද්‍යාල වරම් හිමි කර ගත් බව මෙහි දී ඇය ප්‍රකාශ කළාය.

එසේ ම ගුරුවරු, වෙනත් ඥාතීන්ගේ හා දෙමාපියන්ගේ ආශාවන් මුදුන් පත් කර ගැනීමට තම දරුවන් එසේ යැවූ බවත්, පාසලේ ඇති ජනප්‍රියතාව තම අභිමානයට හා එය සමාජයේ ඉහළ පිළිගැනීමකට හේතුවක් වනු ඇතැයි තමන් සිතූ නිසා කිලෝ මීටර් 75ත් 100ත් අතර පිහිටි කොළඹ, කුරුණෑගල, මහනුවර වැනි ප්‍රධාන නගරවල පාසල්වලට දරුවා ඇතුළත් කළ බව දෙමව්පියන් අට දෙනෙක් පැවසූ හ. එනම් කොළඹට තුන් දෙනෙක් ද කුරුණෑගලට හතර දෙනෙක් ද මහනුවරට එක් අයෙක් ද වශයෙන් සිසුන් ඇතුළත් කළ බව එහි දී අනාවරණය විය. එහෙත් කුරුණෑගල නගරයේ පාසලකට ඇතුළත් කළ ශිෂ්‍යත්වලාභීන් දෙදෙනෙක් පමණක් ඔවුන්ගේ ඉලක්ක කරා ගොස් තිබුණි. කුරුණෑගල හා කුලියාපිටිය නගරයේ පාසල්වලට ඇතුළත් කළ තවත් ළමයින් තුන් දෙනෙකු විවිධ අසනීප, ප්‍රවාහන අපහසුතා, නවාතැන් අපහසුතා හා ඉගෙනුම් පරිසරය වෙනස්වීම යන කරුණු නිසා නැවත තම පදිංචිය ආසන්නයේ පාසල්වලට ඇතුළත් කළ බව ද පැවසී ය. එසේ ම ශිෂ්‍යත්වලාභීන්ගෙන් 10ක් තමා පදිංචි ස්ථානයේ සිට කිලෝ මීටර් 10ත් 15ත් අතර පිහිටි පාසල්වලින් හා තමා ප්‍රාථමික අධ්‍යාපනය ලැබූ පාසලින් උසස් පෙළ අධ්‍යාපනය හදාරා විශ්වවිද්‍යාලයට ඇතුළත් වීමට සුදුසුකම් ලබා තිබුණි.

ශිෂ්‍යත්වලාභීන් උසස් පෙළ විභාගය 34ක් සමත් වුවත්, දෙමව්පියන් හා ශිෂ්‍යත්වලාභීන් බලාපොරොත්තු වූ ඉලක්ක හා ජයග්‍රහණ ලබා ගැනීමට නොහැකි විය. උදාහරණ වශයෙන් ඔවුන්ගේ අරමුණ වූයේ තම දරුවා වෛද්‍යවරයකු හෝ ඉංජිනේරුවරයකු කිරීම ය. එහෙත් උසස් පෙළ විභාගය සාමාන්‍ය අයුරින් සමත් වීම නිසා එම බලාපොරොත්තු ඉටු වී නොමැත.

එසේ ම ඒ සඳහා උපකාරක පන්ති කිහිපයට යැවීම, දෙමාපියන්ගේ පදිංචිය වෙනස් කර දරුවාගේ පාසලට ආසන්නයේ පදිංචි වීම, අධික මුදලක් හා ශ්‍රමයක් කැප කිරීම යන කරුණු ඔවුහු වැඩි දුරටත් සඳහන් කළහ. තව ද භූගෝලීය වශයෙන් දුෂ්කර අධ්‍යාපන ප්‍රදේශ ලෙස නම් කර ඇති දිස්ත්‍රික්කවල ප්‍රාථමික අධ්‍යාපනය ලබා පසුව එසේ භූගෝලීය වශයෙන් දුෂ්කර නොවන අධ්‍යාපන දිස්ත්‍රික්කවල උසස් අධ්‍යාපනය ලැබීම නිසා ශිෂ්‍යත්වලාභීන් 08කට අවශ්‍ය සාධන මට්ටමට ළඟා වීමට නොහැකි වී ඇත.

එසේ ම ශිෂ්‍යත්වලාභීන් රැකියා වශයෙන් විවිධ රැකියාවල නිරත වී තිබුණි. එහි දී වෛද්‍ය, ඉංජිනේරු, නීති, ගුරු වෘත්තිය, විශ්වවිද්‍යාල කථිකාචාර්ය, හෙදි, විදේශ ගත රැකියා, බැංකු, පෞද්ගලික අංශයේ රැකියා හා ස්ථිර රැකියාවක් නොමැති ශිෂ්‍යත්වලාභීන් ඒ අතර විය. එසේ ම ස්ථිර රැකියාවක් නොමැති 10කු සිටි බව මෙහි දී අනාවරණය විය. එය 02 වන වගුවෙන් දැක්වේ.

2 වන වගුව: **ශිෂ්‍යත්වලාභීන් රැකියා අනුව**

රැකියාව	ශිෂ්‍යත්වලාභීන් ගණන
වෛද්‍ය	03
ඉංජිනේරු	02
නීති අංශය	01
ගුරු වෘත්තිය	04
කථිකාචාර්ය	03
හෙදි	01
විදේශ ගත රැකියා	04
බැංකු	02
වෙනත්	10
රැකියාවක් නොමැති	10
එකතුව	40

නිගමන හා යෝජනා

පදිංචි ස්ථානයේ සිට කිලෝ මීටර් 50ත් 100ත් අතර පාසල්වල ඉගෙනුම ලැබූ ශිෂ්‍යත්වලාභීන්ට ඉගෙනීමට අධික වියදමක් දැරීමට සිදුවීම, ගමන් විඩාව නිසා අධ්‍යාපන කටයුතු අඩාලවීමෙන් ඔවුන් බලාපොරොත්තු වූ ප්‍රතිඵල ලබා ගැනීමට නොහැකි වී ඇත. එම නිසා ශිෂ්‍යයා පදිංචි ස්ථානයට ආසන්න 1AB පාසලක් තෝරා ගැනීම වඩාත් ප්‍රතිඵලදායක ය.

අ. පො. ස. සාමාන්‍ය පෙළ ප්‍රතිඵලවලින් පසුව ශිෂ්‍යයාගේ සහජ දක්ෂතා ගුරුවරුන්, දෙමව්පියන් හා වැඩිහිටියන් හොඳින් තේරුම් ගෙන ශිෂ්‍යයාගේ ද කැමැත්ත ඇතිව උසස් පෙළ විෂය ධාරා තෝරා දිය යුතු ය.

භූගෝලීය වශයෙන් නම් කළ දුෂ්කර දිස්ත්‍රික්කවල සිසුන් එම ප්‍රදේශයේ ම පහසුකම් ඇති පාසලක අධ්‍යාපනය ලැබිය යුතු ය.

දෙමව්පියන්ගේ හා ගුරුවරුන්ගේ අවශ්‍යතාව හා වුවමනාවලට අනුව උසස් පෙළ විෂයයන් තෝරා නොගත යුතු ය.

ශිෂ්‍යත්වය සමත් දරුවන්ට ජනප්‍රිය පාසල් තේරීමේ දී දරුවාගේ අසනීප තත්ත්වයන් හා ලෙඩ රෝග, පවුලේ ආර්ථික තත්ත්වය, නව පාසලට ඇති දුර, නේවාසික පහසුකම් පිළිබඳ දෙමව්පියන් ඉතාමත් සැලකිලිමත් විය යුතු ය.

ආශ්‍රිත ග්‍රන්ථ

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REMEDIAL TEACHING TO PROMOTE WEAK STUDENTS IN MATHEMATICS- AN ACTION RESEARCH SPECIAL REFERENCE TO MEASUREMENT SUBJECT

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Summary of the Tamil Article

Mathematics is an important subject in secondary classes. However, it is indicated by researchers that the average mark obtained in mathematics is less than 25%. Slow learning students face difficulties in understanding basic concepts, verification of information and application of information to solve the problems correctly. This situation is mainly observed in the subject unit of measurement.

The objective of the study was to evaluate the effect of remedial teaching in the students' performance. Fifteen (15) students who obtain less than 20 marks from grade 9 were selected for this study. Basic information of these students was collected. Students were involved in a series of remedial teaching activities including repeated coaching with micro unit teaching in the subject unit of measurement as separate interventions. The results of the students were collected and analyzed after and before the application of every intervention.

After the application of the first intervention the marks obtained by the students fell between 8 and 25. It increased to between 23 and 38 after the application of the fourth intervention. Student performances were between 20 and 29 in the final common evaluation.

By observing these results, we can come to conclusion that the remedial teaching, repeated coaching with micro unit teaching is an important tool in promoting the student performances.

Key words: Concept of primary, secondary conception, atonement teaching learning risk

கணித பாடத்தில் கற்றல் இடர்பாடுள்ள மாணவர்களை மேம்படுத்துவதில் பரிகாரக்கற்பித்தல் - அளவியல் பாடப்பகுதியை அடிப்படையாகக் கொண்ட ஒரு செயற்பாட்டு ஆய்வு

ஆய்வுச் சுருக்கம்

இடைநிலை வகுப்புகளில் கணிதபாடம் ஒரு முக்கியமான பாடமாகும். ஆயினும் கணிதபாடத்தில் மாணவர்கள் பெறும் சராசரிப் புள்ளிகள் 25% க்கும் குறைவாக இருப்பதாக சுட்டிக்காட்டப்பட்டுள்ளது. கணிதபாடப் பகுதிகளில் கற்றல் இடர்பாடு கொண்ட மாணவர்களால் அடிப்படை எண்ணக்கருக்களை விளங்கிக் கொள்ளுதல், தரவுகளை பகுப்பாய்ந்து கையாளுதல், கற்றல் இடமாற்றமும் தீர்வு காணுதலும் என்பவற்றில் இடர்ப்படுகின்ற ஒரு பாடப்பரப்பாக கணித பாடத்தில் அளவியல் பாடப்பகுதி காணப்படுகிறது.

தரம் ஒன்பதில் கற்கும் மாணவர்களில் அவர்களின் பெறுபேறுகளுக்கு அமைவாக 20 புள்ளிகளுக்கும் குறைவான புள்ளிகளைப் பெற்ற 15 மாணவர்கள் தெரிவு செய்யப்பட்டு ஆய்வில் ஈடுபடுத்தப்பட்டனர். மாணவர்களின் அடிப்படைப் பின்னணித் தகவல்கள் சேகரிக்கப்பட்டன. தரம் ஒன்பதுக்குரிய முதலாம் இரண்டாம் தவணைகளுக்குரிய அளவியல் பாடப் பகுதிகள் ஆய்வின் நோக்கங்களை நிறைவு செய்யும் வகையில் தனித்தனி தலையீடுகளாக கற்பிக்கப்பட்டன.

கற்பிக்கப்படுவதற்கு முன்னரும் அதன் பின்னருமான பெறுபேறுகள் ஏறக்குறைய ஒரேமாதிரியான பரீட்சிப்பு முறை மூலம் கண்டறியப்பட்டும் ஒவ்வொரு பாடப்பகுதியின் முடிவில் வைக்கப்பட்ட பரீட்சைப் பெறுபேற்றிலிருந்தும் பெறப்பட்ட தகவல்கள் பகுப்பாய்வு செய்யப்பட்டன.

முதல் தலையீடு பிரயோகித்த போது 8க்கும் 25க்கும் இடைப்பட்டதாய் இருந்த ஆரம்பப் பெறுபேறுகள் நாலாவது தலையீட்டைப் பிரயோகிப்பதற்கு பின்னர் 23க்கும் 38க்குமிடையில் உயர்வடைந்தது. இறுதிப் பொதுப் பரீட்சையில் இம்முடிவுகள் 20-39க்கும் இடைப்பட்டதாக காணப்பட்டது.

இதிலிருந்து கற்றல் இடர்பாடுகளை நீக்கி மாணவர்களின் பெறுபேறுகளை அதிகரிப்பதில் பரிகாரக் கற்பித்தல் அவசியமானது என்பது முடிவாகிறது.

முதன்மைச் சொற்கள்: *முதனிலை எண்ணக்கரு, இரண்டாம் நிலை எண்ணக்கரு, பரிகாரக் கற்பித்தல், கற்றல் இடர்பாடு.*

1. அறிமுகம்

1.1 பிரச்சினையின் பின்னணி

கணிதபாடம் பாடசாலைக் கல்வியில் இடைநிலை வகுப்புகளில் ஒரு முக்கியமான பாடமாகும். கணித பாடத்தில் சித்தி பெற்றிருத்தல் தொழில் வாய்ப்புகளுக்கும் உயர் வகுப்புக் கற்கைகளுக்கும் அவசியமாகும். ஆயினும் கணிதபாடத்தில் மாணவர்கள் பெறும் சராசரி புள்ளிகள் 25% க்கும் குறைவாக இருப்பதாக சுட்டிக்காட்டப்பட்டுள்ளது. (ஈ.ஜே.சற்குணராஜா,1991). இலங்கையில் க.பொ.த (சா.த) பரீட்சையின் பெறுபேற்றுப் பகுப்பாய்வுகளின் படி கணிதபாடத்தில் சித்தியடையத் தவறுவதன் காரணமாக அதிகளவான மாணவர்கள் உயர்தரம் கற்க தகுதியற்றவர்களாக உள்ளதாக அறியப்பட்டுள்ளது. (Sarojini Dias , 1993)

கணித பாடத்தினை பயிற்சிகளைச் செய்வதன் மூலமும் தவறுகளுக்கான திருத்தங்களை கிரகிப்பதன் மூலம் மாணவர்கள் உள்வாங்கிக் கொள்ளுகின்றார்கள். ஆயினும் பெரும்பாலான மாணவர்கள் கணிதபாடப் பகுதிகள் பலவற்றை ஒரே கற்பித்தலில் விளங்கிக் கொள்ளமுடியாமை பிரச்சினையாகக் காணப்படுகிறது.

இத்தகைய கற்றல் இடர்பாடு கொண்ட மாணவர்களால் அடிப்படை எண்ணக்கருக்களை விளங்கிக் கொள்ளுதல், தரவுகளை பகுப்பாய்ந்து கையாளுதல், கற்றல் இடமாற்றமும் தீர்வு காணுதலும் என்பவற்றில் இடர்ப்படுகின்ற ஒரு பாடப்பரப்பாக கணித பாடத்தில் அளவியல் பாடப்பகுதி காணப்படுகிறது. (Nosisi Feza Piyose, 2012)

அளவியல் பாடப் பகுதியில் மாணவர்கள் எதிர்நோக்குகின்ற பிரச்சினைகளை இனங் காண்பதில் இவ்வாய்வு முக்கியத்துவமுடையதாகின்றது. அளவியல் பாடத்தின் அடிப்படை எண்ணக்கருக்களை விளங்கிக் கொள்ளுதல், எண்ணக்கருக்களின் பிரயோகம், தரவுகளை சரியாக இனங்கண்டு பிரயோகித்தல், மற்றும் மேலதிக பயிற்சியின் மூலம் மாணவர்களை மேம்படுத்தல் முதலான தலையீடுகளை வழங்குவதன் மூலம் மாணவர்களின் கற்றல் மாற்றங்களை மதிப்பீடு செய்யும் ஒரு செயல்மூல ஆய்வாக அது உள்ளது.

1.2 பிரச்சினை முன்வைப்பு

மாணவர்கள் கற்றல் இடர்பாடுகளை எதிர்கொள்ளுகின்ற பாடங்களில் கணித பாடம் முக்கியமாகக் காணப்படுகின்றது. ஏனைய பாடப்பகுதிகளை விட கணித பாடப்பகுதியில் தரவுகளை இனங்காணுதல், அவற்றைப் பிரயோகித்துத் தீர்வு காணுதல் என்பவற்றில் பிரச்சினைகளை எதிர் நோக்குகின்றனர். சில மாணவர்கள் கணித பாடத்தில் மெல்லக் கற்கின்ற மாணவர்களாகக் காணப்படுகின்றனர். இந்த வகையில் தரம் 09 கணித பாடத்தில் அளவியல் பாடப்பகுதி மேம்படுத்தப்பட வேண்டிய பாடப் பகுதியாக அறியப்பட்டது.

இத்தகைய மாணவர்களை இனங்காண்பதுவும், இவர்களுக்கான பரிகாரக் கற்பித்தல் மற்றும் மேலதிக பயிற்சிகளை வழங்குதலும் கற்பித்தல் உத்திகளை மாற்றுவதும் அவசியமாகும். இதனடிப்படையில், பரிகாரக் கற்பித்தல் மூலம் மாணவர்கள் பயிற்றப்பட்டு மாணவர்களின் பெறுபேறுகளை ஒப்பீடு செய்யும் ஓர் ஆய்வாக இது முன்னெடுக்கப்பட்டது.

2.0 இலக்கிய மீளாய்வு

2.1 அளவியல் பாடத்திலுள்ள கற்றல் சவால்கள்

அளவியல் பாடம் என்பது இடவமைவு அல்லது கேத்திரநிலை மற்றும் மெய்யெண்கள் என்பவற்றை இணைக்கும் கணிதப் பகுதி ஆகும். இது மரபார்ந்த கற்பித்தல் முறைமைகளின் ஊடாக தனியே நியமம் மற்றும் நியமம் சாரா அலகுகளால் மட்டும் அளவிடப்படும் ஒன்றாகவே கற்பிக்கப்படுகின்றது. வகுப்பறை மேசையில் கருவிகளாலும் சமன்பாடுகளாலும் கணிக்கப்படும் நடைமுறைகளே பாடத்திட்டங்களின் மூலம் கற்பிக்கப்படுகின்றது. இவற்றுக்கு மேலதிகமாக புலக்காட்சிக்கு உட்பட்டு மன ஒப்பீடு மற்றும் மனக் கணிப்பு முறைகளையும் உள்ளடக்கிய வகையிலும், இடவமைவு மற்றும் கேத்திர நிலைகளை நேரடியாகக் கணிக்கும் கற்பித்தல் முறைகளை உள்ளடக்கியதாக கலைத்திட்ட மாற்றம் அவசியமாகும். (Douglas H.Clements,1999)

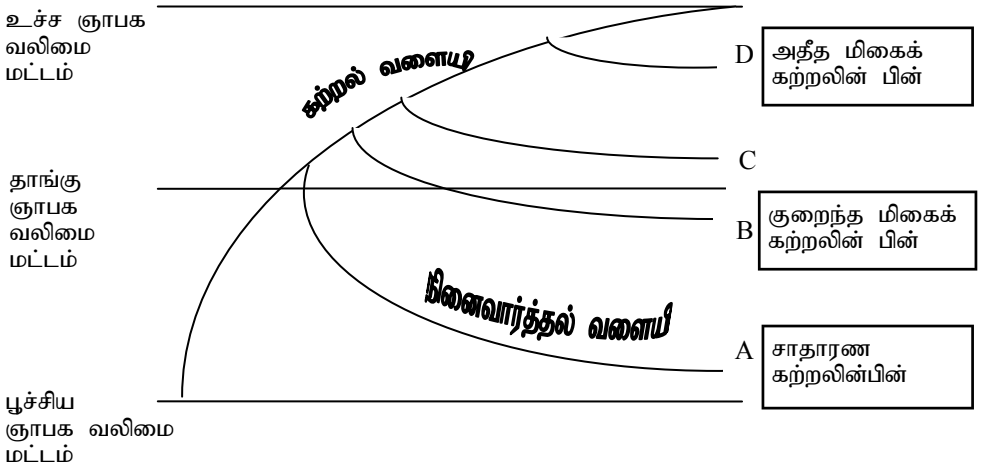
2.2 கற்றல் இடர்பாட்டுக்கான காரணங்கள்

மாணவர்கள் கற்றலில் இடர்படும் போது அதை கலைத்திட்டத்தை விளங்கிக் கொள்வதிலுள்ள திறமையீனம் அல்லது மாணவர்களின் ஊக்கமும் ஒத்துழைப்புமின்மை எனக்கூறுகின்றோம். இதன் போதெல்லாம் பெறுபேறுகளை அதிகரிக்க முயலும்படி மாணவர்களுக்கே அறிவுரை கூறப்படுகிறது. ஆனால் றொன்னின் ஆய்வுகளின்படி இதற்கு மேலதிகமாக ஏனைய நான்கு காரணிகள் அவர்கள் கற்றல் இடர்பாடுள்ளவர்களாக இருப்பதில் தாக்கம் செலுத்துகின்றது. அவை:

1. பாட விடயத்தின் தரம் - மீத்திறன் கொண்ட மாணவர்களுக்குக் கூட கற்றுக் கொள்வதற்கு கடினமானதாக பாட விடயத்தின் தரம் அமைந்து விடுகிறது.
2. பாடவிடயத்தை சமர்ப்பிக்கும் முறை – ஆசிரியர், மாணவர், மற்றும் பாட விடயங்களுக்கிடையில் சரியான இடைத்தாக்கத்தைக் கொண்டதாக பாடவிடயம் சமர்ப்பிக்கப்பட வேண்டும்.
3. மாணவர் தயார்நிலை – வகுப்பறையில் மாணவர்கள் தயார் நிலைப் படுத்தப்படாதவரை கற்றல் நடைபெறுவதில்லை. கற்றலின் போது மாணவர்களை கவனக் குவிப்புச் செய்தல் அவசியமாகிறது.
4. மாணவர் அணுகுமுறை – மாணவர்களின் கற்றல் அணுகுமுறை பற்றிக் கவனம் செலுத்துவது இதுவாகும். மாணவர்கள் எவ்வாறு கற்கிறார்கள், எதை இலகுவாக விளங்கிக் கொள்வார்கள் என்பது பற்றி அறிந்து அதற்கேற்ப கற்பித்தல் இதுவாகும்.(Dultz, Ron.,1994)

2.3 கற்றல் அடைவை அதிகரிப்பதில் மீளக்கற்றல்

நினைவார்த்தலை அதிகரிப்பதற்கு மீளக்கற்றல் அல்லது மீண்டும் மீண்டும் கற்றல் அவசியமாகுமென உளவியலாளர்கள் விளக்கியுள்ளனர். கருத்தூன்றி மீண்டும் மீண்டும் கற்கப்படும் போது நினைவில் நிலைநிறுத்தப்படும் அளவு மேல் நோக்கி நகர்கிறது.



உரு 2.1 மீளக்கற்றலின் பின் நினைவார்த்தல் வளையி

மேலுள்ள படத்தில் வளையி A சாதாரண கற்றலின் பின் நினைவார்த்தல் குறைவடையும் முறைமையையும் மீண்டும் மீண்டும் கற்றலின் மூலம் நினைவார்த்தல் கட்டியெழுப்பப் படுவது படத்தில் B, C, D ஆகிய வளையிகளாலும் காட்டப்பட்டுள்ளது. (Gate, I .et.al.1958)

2.4 குறைநீக்கல் கற்பித்தல் முறை

கற்றல் இடர்பாடுகளை நீக்குவதற்கு சிகிச்சை தழுவிய முறையில் மேற்கொள்ளப்படும் கற்பித்தல் அணுகுமுறை இதுவாகும். இது பரிகாரக் கற்பித்தல் முறை எனவும் நோக்கப்படுகிறது. இக்கற்பித்தல் முறையின் படிமுறைகளாவன:

1. இடர்பாடுள்ள மாணவர்களை இனங்காணுதல்.
2. இடர்பாட்டினைக் கண்டறிதல்.
3. இடர்பாட்டின் தன்மையைப் பகுப்பாய்தல்.
4. இடர்பாட்டினை தீர்ப்பதற்குப் பொருத்தமான கற்பித்தல் முறைகளைப் படிமுறையாக்கல்.
5. கற்பித்தல் அணுகுமுறைகளை நடைமுறைப்படுத்தலும் மீள வலியுறுத்தலும்.
6. கணிப்பீடு, பின்னூட்டல் செயற்பாடுகளை மேற்கொள்ளுதல்.

(தனபாலன், பா., 2008)

2.5 நுண்ணலகுக் கற்பித்தல் முறை

குறுகிய நேரத்தில் சிறு தொகைப் பிள்ளைகளுக்கு பாட அலகொன்றின் சிறு பகுதியை அதன் குறிக்கோள் நிறைவேறும் வகையில் பொருத்தமான கற்பித்தல் செயற்பாட்டின் ஊடாகக் கற்றலுக்கு வழிப்படுத்தலையே இம்முறைக் கற்பித்தல் எனக் கொள்ளுகிறோம். கற்றல் இடர்பாடுகளை நீக்குவதற்கு இம்முறையைச் சிறப்பாகப் பயன்படுத்தலாம். (தனபாலன், பா., 2008)

2.6 கணித பாடக் கற்றலில் குறைந்த அடைவு மட்டத்திற்கான காரணங்கள்.

சரோஜினி டயஸ் 1993 இல் கொழும்புப் பல்கலைக்கழகத்தில் தத்துவமானிப் பட்டத்திற்காக (M.Phil) மேற்கொண்ட ஆய்வொன்றின் படி கணித பாடக்கற்றலில் மாணவர்களின் அடைவுமட்டம் குறைவுபட்டுக் காணப்படுவதற்கு பின்வரும் காரணிகள் பின் நிற்பதாகச் சுட்டிக் காட்டுகிறார்.

1. ஆசிரியர்கள் கற்பித்தலில் முறையான தயார் நிலையின்றி ஈடுபடுதல்.
2. மாணவர்களின் தனிப்பட்ட வேறுபாடுகளைக் கருதாது ஒரே மாதிரியான கற்பித்தலை மேற்கொள்ளுதல்.
3. பாடவிடய உள்ளடக்கம் மாணவர்களின் நாளாந்த வாழ்க்கை முறையுடன் தொடர்பில்லாததாயிருத்தல்.
4. மாணவர்களைப் பாடத்தின் பால் கவரக் கூடியதான கற்பித்தல் உபகரணங்கள் பயன்படுத்தப்படாமை
5. மெல்லக் கற்கும் மாணவர்கள் மீது ஆசிரியர்கள் கவனம் செலுத்தாத நிலைமை.
6. கற்றல் இடர்பாடு கொண்ட மாணவர்கள் அறியப்பட்டாலும் விசேட கவனிப்புச் செலுத்தாமை.
7. வெவ்வேறு கற்றல் திறனுள்ள மாணவர்களுக்கும் பொருந்தக் கூடியதாக கற்பித்தல் முறை அமையாமை.
8. பயிற்சிகளை தேவைக்கதிகமாக வேகமாகச் செய்து முடிப்பதிலும் செய்கை முறையை விட இறுதி விடையில் கவனம் செலுத்துபவர்களாகவும் ஆசிரியர்கள் செயற்படுதல்.
9. பாடத்திட்டத்தை நிறைவுசெய்வதற்கு நேரம் போதாதிருத்தலும் போதுமானளவு பயிற்சிகள் மேற்கொள்ளப்படாமையும்.(Sarojini Dias , 1993)

2.7 கணித பாடக் கற்றலில் பரிகாரக் கற்பித்தலும் தேவைகளும்

கேத்திர கணிதப் பகுதிகள், புள்ளிவிபரவியல் பகுதிகள் ஆகியவற்றில் அட்சர கணித மற்றும் எண்கணித பகுதிகளை விட கிரகித்தல் செய்வதில் மாணவர்கள் சிரமங்களை எதிர்நோக்குகிறார்கள். இவற்றில் கற்பித்தல் உத்தி மாற்றம் தேவைப்படுகிறது. கிரகித்தல் திறன் மாணவர்களுக்கிடையில் வேறுபாடுகளைக் கொண்டது. எனவே பின்னடைவான மாணவர்களுக்குப் பரிகாரக்கற்பித்தல் அவசியமாகும்.

இடறல் வழு, தீர்த்தல் வழு ஆகியன காணப்படுவதும் கேத்திர கணிதப் பகுதிகளில் உயர்வாக இருந்தது. வகுப்பறைகளில் ஒதுக்கப்படும் கற்பித்தலுக்கான நேரம் மேலதிக பயிற்சிகளை வழங்குவதற்குப் போதாது. எனவே அதிகளவு பயிற்சிகளை வழங்கக்கூடிய வகையில் வீட்டு வேலை (Home Works), ஒப்படைகள் (Assignments) முதலானவற்றை வழங்கலாம்.

விசேட கற்பித்தல் உத்திகளைப் பயன்படுத்துதல், மேலதிக நேரக் கற்பித்தல், அதிகளவு பயிற்சியை வழங்குதல் வீட்டு வேலை வழங்குதல் மற்றும் அவற்றை மதிப்பிடுதல் என்பவற்றை மேற்கொள்வதற்கு ஆசிரியர்கள் வசதியளிக்கப்பட வேண்டும். கற்பித்தல் உபகரணங்களுக்கான வளங்கள், பரீட்சிப்பு வினாத்தாள்கள், மேலதிக பயிற்சிக்கான வினாத்தாள்கள் ஆகியவற்றைத் தயாரிப்பதற்குரிய வசதிகள் செய்யப்படுவதன் மூலம் இவ்வாய்ப்புகளை வழங்க முடியும்.
(தனுஷியா, ந 2001)

3. ஆய்வு முறை

3.1 நோக்கங்கள்

பின்வரும் நோக்கங்களை அடையக்கூடியதாக இவ்வாய்வு கட்டமைக்கப்பட்டது.

ஆய்வின் முதன்மை நோக்கம்:
பரிகாரக் கற்பித்தலின் மூலம் மாணவர்களின் அடைவு மட்டத்தில் ஏற்படும் மாற்றங்களை மதிப்பிடுதல்.

துணை நோக்கங்கள் :

1. பெற்றோர்களின் கல்வி, தொழில், பாடசாலைக்கும் தங்குமிடத்துக்கும் இடையிலான தூரம் மற்றும் மாணவர்களின் மீளக்கற்றல் முறை என்பவற்றும் கற்றல் பெறுபேறுகளுக்குமிடையிலான தொடர்புகளை அறிதல்.

2. பரிகாரக் கற்பித்தல் தனித் தனித் தலையீடுகளாக வழங்கப்பட முன்னும் பின்னும் மாணவர்களின் பெறுபேறுகளின் போக்குகளை அறிதல்.

3.2 செயற்படுத்தப்பட்ட முறை
அடையாளம் காணப்பட்ட இலக்குக் குழுவினரிடையே நடாத்தப்பட்ட ஒரு செயல் மூல ஆய்வு இதுவாகும்.

இச்செயல் மூல ஆய்வில் தரம் ஒன்பதுக்குரிய முதலாம் இரண்டாம் தவணைகளுக்குரிய அளவியல் பாடப் பகுதிகள் ஆய்வின் நோக்கங்களை நிறைவு செய்யும் வகையில் தனித்தனி தலையீடுகளாக கற்கச் செய்யப்பட்டன. தலையீடுகளை வழங்குவற்கு முன்னுள்ள நிலையும் தலையீடுகள் வழங்கப்பட்டதற்குப் பின்னரான பெறுபேறுகளும் ஒரே மாதிரியான பரீட்சிப்பு வினாத்தாள்கள் மூலம் பரிசோதிக்கப்பட்டன.

இவ்வாய்வில் முதலாம் தவணைக்குரிய 5 பாடவேளைகளைக் கொண்ட திரவ அளவீடு, இரண்டாம் தவணைக்குரிய 5 பாடவேளைகளைக் கொண்ட வட்டத்தின் பரிதி ஆகிய பகுதிகள் உள்ளடக்கப்பட்டிருந்தன. ஆயினும் இவற்றுக்கான அடிப்படைத் தேர்ச்சி மட்டங்கள் முறையே தரம் 7 இலும் தரம் 8 இலும் அடையப்பட்டிருக்க வேண்டும். இதனைக் கருத்தில் கொண்டு ஆய்வு நோக்கத்தில் விபரிக்கப்பட்ட அடைவுகளைப் பெறும்வகையில் ஒவ்வொன்றும் ஒவ்வொரு மணித்தியாலங்கள் கொண்ட பத்து அமர்வுகளாக ஆய்வுச் செயற்பாடு முன்னெடுக்கப்பட்டது. எண்ணக்கருக்களை மீள விளக்குதல், காட்சிப்படுத்தல், நடைமுறை உருக்களூடாக விளக்குதல், மேலதிக பயிற்சிமுதலான பரிகாரக் கற்பித்தல், முறைகள் மூலம் பின்வரும் தலையீடுகள் பிரயோகிக்கப்பட்டு பிரயோகத்தின் முன்னரும் பின்னரும் மாணவர்களின் அடைவுகள் பரீட்சிக்கப்பட்டன.

தலையீடு-01: திரவ அளவீடு, முதனிலை எண்ணக்கருக்களை விளங்கிக் கொண்டு அடிப்படைக் கணிதச் செய்கைகளைக் கையாளுதல்.

தலையீடு-02: திரவ அளவீடு, முதனிலை எண்ணக்கருக்களின் பிரயோகங்களையும் இரண்டாம் நிலை எண்ணக்கருக்களையும் விளக்குதல்.(திரவங்கள் cm^3, m^3 அலகுகளிலும் அளக்கப்படுதலை விளக்குதல்).

தலையீடு-03: திரவ அளவீடு, பிரசினங்களைத் தீர்ப்பதில் தரவுகளை இனங்காணுதல், பிரயோகித்தல் முதலான உத்திகளை விளக்குதல்.

தலையீடு-04: திரவ அளவீடு, மேலதிக பயிற்சி மூலம் கற்றலை மேம்படுத்துதல்.

தலையீடு-05 :வட்டம், முதனிலை எண்ணக்கருக்களை விளங்கிக் கொண்டு அடிப்படை கணிதச் செய்கைகளைக் கையாளுதல்.

தலையீடு-06: வட்டம், முதனிலை எண்ணக்கருக்களின் பிரயோகங்களையும் இரண்டாம் நிலை எண்ணக்கருக்களையும் விளக்குதல்.(நாணயம், பால்மா ரின், மீன் ரின், ஜேம் போத்தல், காப்பு முதலான பொருட்களின் விட்டம், ஆரை என்பவற்றை அளந்தறிதல்)

தலையீடு-07: வட்டம் - பிரசினங்களைத் தீர்ப்பதில் தரவுகளை இனங்காணுதல், பிரயோகித்தல் முதலான உத்திகளை விளக்குதல்.

தலையீடு 08: வட்டம் - மேலதிக பயிற்சி மூலம் கற்றலை மேம்படுத்துதல்.

3.3 தரவு சேகரித்தல்

3.3.1 தரவுகள் மூலாதாரங்கள்

இவ்வாய்வில் இலக்குக் குழுவினர் பற்றிய அடிப்படைத்தகவல்கள் கட்டமைக்கப்பட்ட வினாக்கொத்து மூலம் திரட்டப்பட்டன. ஆசிரியர்களும் பெற்றோர்களும் பேட்டி காணப்பட்டு தகவல்கள் அறியப்பட்டன. இதற்கு மேலதிகமாக மாணவர்களின் ஆரம்ப நிலையில் கணித பாட அளவியல் பகுதியில் காணப்பட்ட அறிவும் செயல் மூல ஆய்வு மேற்கொள்ளப்பட்ட பின்னர் காணப்பட்ட அறிவு நிலையும் பரீட்சிப்பு மூலம் அறியப்பட்டது.

இரண்டாம் நிலைத்தகவல்கள் பாடசாலையில் காணப்பட்ட பதிவுகளிலிருந்தும் பரீட்சைக் குறிப்பேடுகளிலிருந்தும் பெறப்பட்டன.

1. கட்டமைக்கப்பட்ட வினாக்கொத்து

தெரிவு செய்யப்பட்ட 15 மாணவர்களின் வயது, பெற்றோர்களின் கல்வி நிலை (ஆரம்ப வகுப்பு, இடைநிலை வகுப்பு, உயர் வகுப்பு, பட்டதாரி), தொழில், பாடசாலைக்கும் வதிவிடத்திற்குமான தூரம், மீளக் கற்கும் முறை (சுயமாக, வீட்டிலுள்ள படித்தவர்களின் உதவியுடன், பிரத்தியேக வகுப்பு மூலம், எதுவுமில்லை) முதலான தகவல்கள் வினாக்கொத்து மூலம் திரட்டப்பட்டன.

2. பரீட்சை வினாத்தாள்கள் / மதிப்பீட்டுக் கருவிகள்

ஒவ்வொரு தலையீட்டின் இறுதியிலும் அடைவுகள் பரிசோதிக்கப்பட்டன. இம்மதிப்பீடு தேவைக்கேற்ப வாய் மொழிமூல வினாவாகவோ அல்லது எழுத்து மூல வினாத்தாளாகவோ அமைந்திருந்தது. இறுதியில் ஒரு பொது வினாத்தாளின் மூலம் அடைவுகள் பரிசோதிக்கப்பட்டன.

3. மாணவர்களின் பயிற்சிப் புத்தகங்கள் (Exercise Books)

மாணவர்கள் தம் பயிற்சிப் புத்தகங்களில் குறிப்பெழுதியுள்ள தன்மை, பயிற்சிகள், திருத்தங்கள் என்பவற்றில் ஈடுபட்டுள்ள முறை என்பன பரிசீலிக்கப்பட்டு பதிவு செய்யப்பட்டன.

4. பாடசாலைப் பதிவேடுகள்

- இதே மாணவர் குழு தமது தரம் 8 இல் பெற்றுக்கொண்ட இறுதியாண்டுப் பெறுபேறுகள் பரிசீலிக்கப்பட்டன.
- தரம் 9 இல் முதலாம் இரண்டாம் தவணைகளில் இம்மாணவர்கள் பெற்றுக்கொண்ட பெறுபேறுகள் பரிசீலிக்கப்பட்டன.

4.0 பெறுபேறுகளை முன்வைத்தலும் பகுப்பாய்வு செய்தலும்

4.1 முதன்மை நிலை

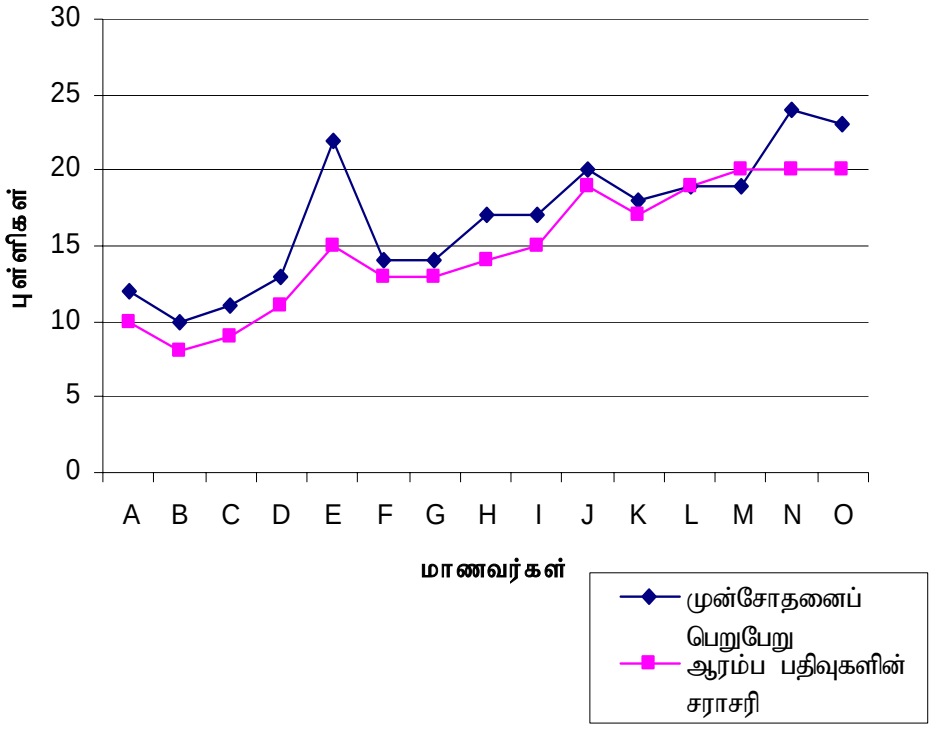
4.1.1 பெறுபேறுகள்:

ஆய்வுக்குட்படுத்தப்பட்ட மாணவர்கள் எட்டாந்தர ஆண்டிறுதிப் பரீட்சையிலும் மற்றும் ஒன்பதாந் தர முதலாம் இரண்டாம் தவணைப் பரீட்சையிலும் பெற்றுக் கொண்ட புள்ளிகளின் சராசரிப் பெறுமதிகள் பெறப்பட்டன. மாணவர்களின் பெறுபேறுகள் 08 க்கும் 20 க்கும் இடைப்பட்டதாகக் காணப்பட்டன. இவர்களின் இப்பெறுபேறுகளை பின்வருமாறு வகுப்பாயிடைப்படுத்தலாம் (அட்டவணை 4.1).

புள்ளிகளின் வகுப்பாயிடை	பெற்ற மாணவர்கள்
6-10	**3**
11-15	**6**
16-20	**6**

அட்டவணை 4.1 மாணவர்களின் பதிவுசெய்யப்பட்ட பெறுபேறுகளின் சராசரி

இம் மாணவர்களிடையே ஆரம்ப தரமறியும் பரீட்சை (முன்சோதனை) ஒன்று நடாத்தப்பட்டது. இப்பரீட்சையில் திரவ அளவீடு மற்றும் வட்டம் ஆகிய பாடப்பகுதிகள் உள்ளடக்கப்பட்டிருந்தன. மாணவர்கள் பெற்ற பெறுபேறுகள் படம் 4.1 இல் காட்டப்பட்டுள்ளன.



உரு 4.1 மாணவர்களின் பதிவுசெய்யப்பட்ட பெறுபேறுகளின் சராசரியும் முன்சோதனைப் பெறுபேறும்

4.1.2 மீளக்கற்றல் முறை

கற்றலில் பின்தங்கிய மாணவர்களென அறியப்பட்டவர்களிடையே அவர்களின் மீளக்கற்கும் முறையை அறிவதற்காக வினவப்பட்ட கேள்விக்கு அவர்கள் தந்த தகவல்களின்படி அவர்களில் 60 சதவீதமானவர்கள் பிரத்தியேக வகுப்புகளுக்குச் சென்று மீளக்கற்பதாக அறியப்பட்டது. இவர்களில் 20 சதவீதமானவர்கள் எந்தவொரு மீளக்கற்றலையும் செய்யவில்லை. 20 சதவீதமான மாணவர்கள் வீட்டில் அல்லது அயலில் உள்ள பெரியவர்களின் உதவியுடன் மீளக்கற்பதாகக் கூறினர்.

உரு 4.3 ஆய்வுக்குட்பட்ட மாணவர்களின் மீளக்கற்றல் முறை

4.1.3 மாணவர் வரவு

வகுப்பில் கற்றல் இடர்பாடுள்ள மாணவர்களின் பாடசாலை வரவு குறைவாக இருந்தமையும் பாடசாலைக்கு குறைவான வரவை உடைய மாணவர்களாயிருப்பது உறுதி செய்யப்படக் கூடியதாயிருந்தது. 2010 ஆம் ஆண்டு தரம் 9 இல் முதல் இரண்டு தவணைகளிலும் இம்மாணவர்களின் வரவு வீதம் வருமாறு.

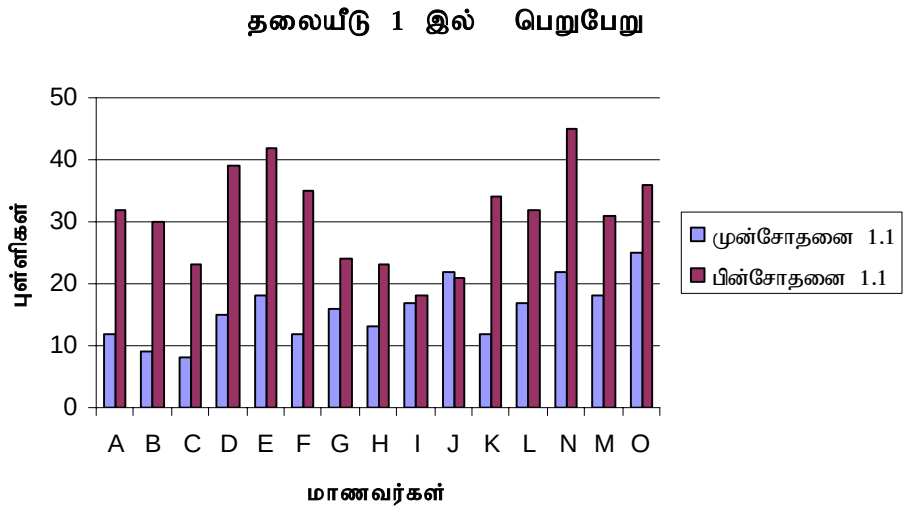
அட்டவணை 4.3 ஆய்வுக்குட்பட்ட மாணவர்களின் பாடசாலை வரவு

வரவு வீதம்	மாணவர் தொகை
100-80	6
60-80	7
40-60	2

4.2 ஈடுபாட்டின் மூலம் கண்டறியப்பட்டவை

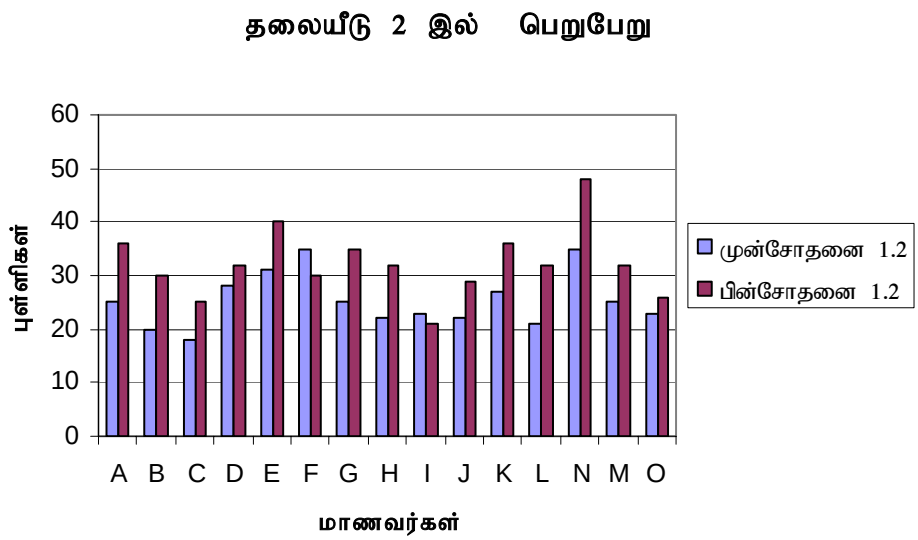
ஒவ்வொரு பாடப்பரப்பிற்கும் ஐந்து தலையீடுகள் வீதம் திரவ அளவீடு, வட்டம் ஆகிய பாடப்பரப்புகளை மீளக் கற்கும் வகையில் மொத்தம் 08 பரிகாரங்கள் மேற்கொள்ளப்பட்டன. மீளக்கற்றலின் முன்னும் மீளக்கற்றலின் பின்னரும் மாணவர்களின் அடைவு மட்டங்கள் பரிசோதிக்கப்பட்டு பதிவு செய்யப்பட்டன.

தலையீடு பிரயோகிக்கப்பட முன்னரும் பின்னரும் மாணவர்களின் அடைவுகள்

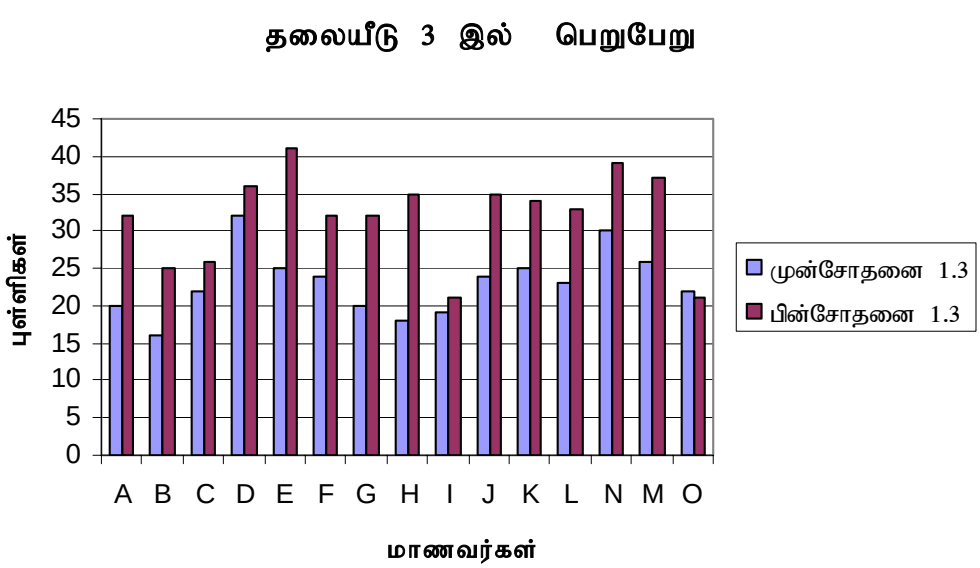


உரு 4.6 தலையீடு 01 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு

பெறுபேறுகள் பெரும்பாலான மாணவர்களில் இரட்டிப்புத் தன்மை கொண்டதாகக் காணப்பட்டது.



உரு 4.7 தலையீடு 02 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு



உரு 4.8 தலையீடு 03 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு

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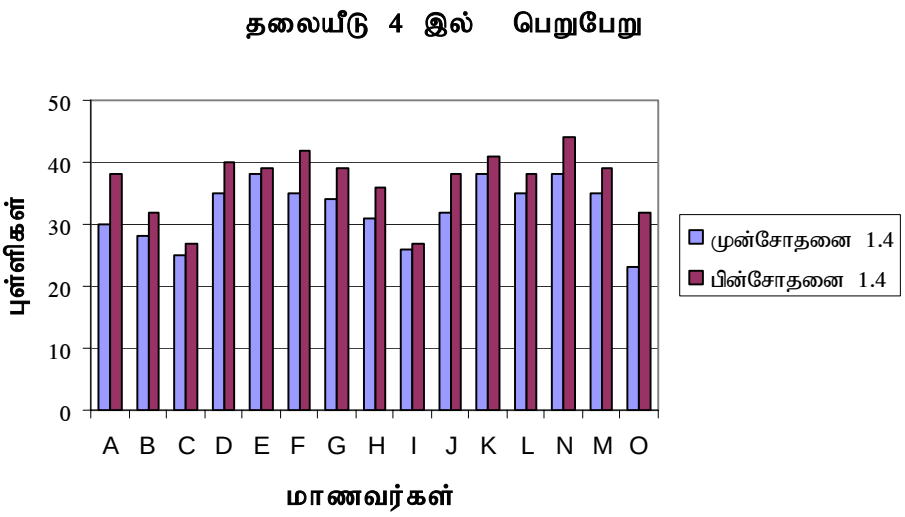
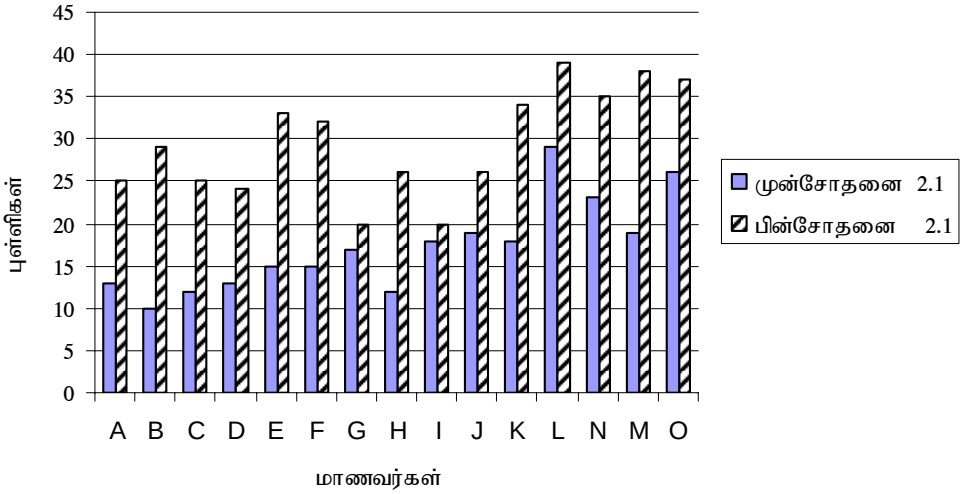
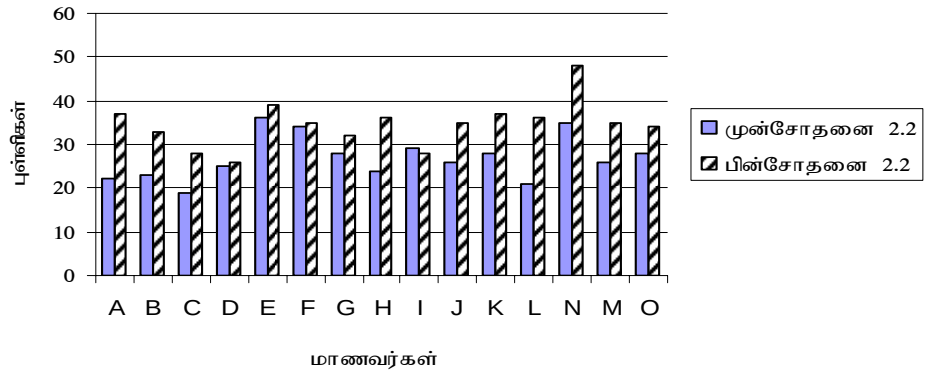


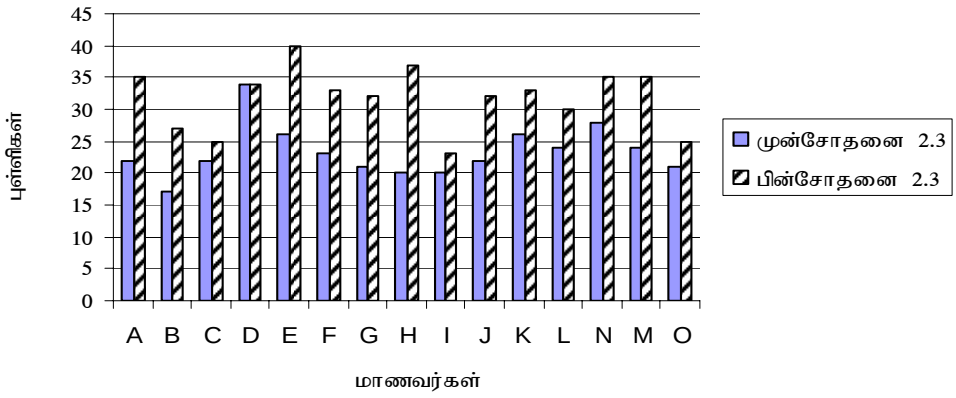
உரு 4.9 தலையீடு 04 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு



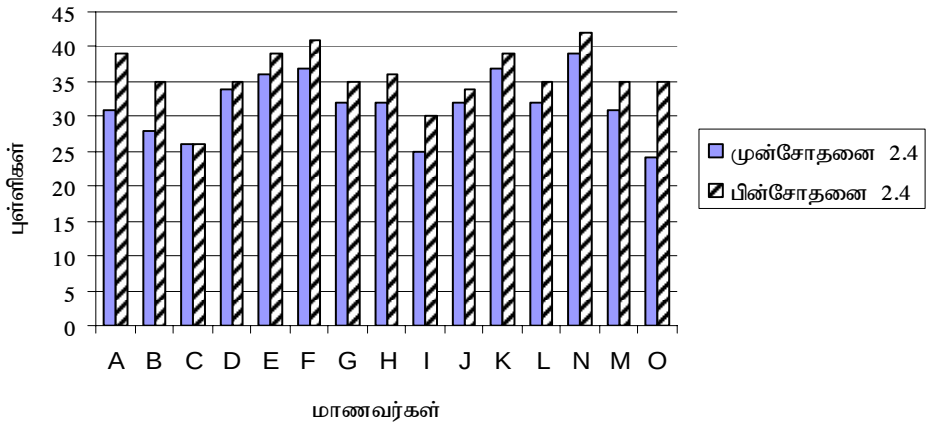
உரு 4.10 தலையீடு 05 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு



உரு 4.11 தலையீடு 06 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு



உரு 4.12 தலையீடு 07 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு



உரு 4.13 தலையீடு 08 இன் முன்னும் பின்னும் மாணவர்களின் பெறுபேறு

4.3 பெறுபேறுகளின் பகுப்பாய்வு

இம்மாணவர்களில் 60 சதவீதமான பெற்றோர்கள் குறைந்தபட்சம் சாதாரண தரம் வரையாவது கல்வி கற்றவர்களாகக் காணப்பட்டனர். இதேபோல் 13.37 சதவீதமான பெற்றோர்கள் அரச தொழில் புரிபவர்களாகவும் காணப்பட்டனர். பெரும்பாலான மாணவர்கள் தம் வீட்டிலிருந்து பாடசாலைக்கு வருகை தருபவர்களாகக் காணப்பட்டனர். அத்துடன் 60 சதவீதமானவர்கள் பிரத்தியேக வகுப்புகளில் கற்பவர்களாகக் காணப்பட்டனர்.

மேலே திரவ அளவீடு, வட்டம் ஆகிய இரண்டு பகுதிகளும் மீளக் கற்பித்தல் நடைபெற்ற உடனேயான தலையீடுகளில் (தலையீடுகள் 1, மற்றும் 5) பெறப்பட்ட பெறுபேறுகள் சடுதியான உயர்வைக் கொண்டு காணப்பட்டன. சில சந்தர்ப்பங்களில் இவ்வுயர்வு இரட்டிப்பு முதல் 2.33 மடங்கிலான உயர்வைக் கொண்டு காணப்பட்டன. இது ஒரு நுண்ணலகுக் கற்பித்தலாகவும் பரிகாரக் கற்பித்தலாகவும் அமைந்தமையும் அடிப்படை எண்ணக்கருக்களின் மீட்டலாக இருந்தமையாலும் இந்த அதீத அடைவை இலகுவாக ஈட்டக் கூடியதாயிருந்தது.

இரண்டாம் நிலைத் தலையீடுகளான தலையீடுகள் 2, 6 என்பன வழங்கப்படுவதன் முன்னரும் பின்னருமான பெறுபேறுகள் உறுதியாக உயர்வடைந்திருந்தன. 3 % முதல் 71 சதவீதத்திற்கும் அதிகமான புள்ளி உயர்வுவரை அவதானிக்கப்பட்டது. அட்டவணை 4.4இல் இந்த அதிகரிப்புத் தன்மை முழுமையாக விபரிக்கப்பட்டுள்ளது.

மாணவர்	முன்சோதனை 1.2	பின்சோதனை 1.2	அதிகரிப்பு	முன்சோதனை 2.6	பின்சோதனை 2.6	அதிகரிப்பு
A	25	36	44.0%	22	37	68.2%
B	20	30	50.0%	23	33	43.5%
C	18	25	38.9%	19	28	47.4%
D	28	32	14.3%	25	26	4.0%
E	31	40	29.0%	36	39	8.3%
F	35	30	-14.3%	34	35	2.9%
G	25	35	40.0%	28	32	14.3%
H	22	32	45.5%	24	36	50.0%
I	23	21	-8.7%	29	28	-3.4%
J	22	29	31.8%	26	35	34.6%
K	27	36	33.3%	28	37	32.1%
L	21	32	52.4%	21	36	71.4%
M	35	48	37.1%	35	48	37.1%
N	25	32	28.0%	26	35	34.6%
O	23	26	13.0%	28	34	21.4%

அட்டவணை 4.4 ஆய்வுக்குட்பட்ட மாணவர்களின் 2 ம் 6ம் தலையீடுகளுடனான பெறுபேறுகளின் ஒப்பீடு

தொடர்ந்து வழங்கப்பட்ட தலையீடுகளின் போதும் மாணவர்களின் பெறுபேறுகள் உயர்வடைந்த போக்கே காணப்பட்டது. ஆயினும் உயர்வடைந்த சதவீதம் ஆரம்ப நிலைத் தலையீடுகளிலும் குறைவானதாயிருந்தது.

ஒரு நுண்ணலகுக் கற்பித்தல் நடைபெற்றவுடன் பரீட்சிக்கும் போது சிறந்த பெறுபேறுகள் காணப்பட்டாலும் பல நுண்ணலகுகள் ஒன்று சேர்க்கப்படும்போது காணப்படும் கிரகித்தற் பெறுபேற்றை பரிசோதிக்கும் நோக்கில் ஒவ்வொரு பாட அலகிற்கும் நான்கு தொடர் தலையீடுகளும் நிறைவடைந்த பின்னரான ஒரு பொது மதிப்பீடும் செய்யப்பட்டிருந்தது.

அட்டவணை 4.4 இல் தரப்பட்டுள்ள இப் பெறுபேறுகளில் E, N ஆகிய மாணவர்களின் பெறுபேறுகள் தொடர்ச்சியாக வளர்ந்து சித்தி பெறுவதற்குரிய அடிப்படைத்தரத்தை எட்டி நிற்பதைக் காணலாம். மற்றைய மாணவர்களது பெறுபேறுகளும் தொடர்ச்சியாக வளர்ந்து வந்துள்ளது தெளிவாகத் தெரியும் முடிவாகும்.

5.0 முடிவுகளும், பிரேரணைகளும்

5.1 மீளாய்வு

இந்த ஆய்வு மிகப் பின்தங்கிய மாணவர்களை தொடர்ச்சியான தலையீடுகளுக்கு உட்படுத்தியது. இத்தலையீடுகள் நுண்ணலகுக் கற்பித்தலாகவும் பரிகாரக் கற்பித்தலாகவும் அமைந்திருந்தன. இதனால் குறிப்பிடத்தக்க முன்னேற்றம் ஒவ்வொரு தலையீடுகளின் பின்னும் மாணவர்களில் அவதானிக்கப்பட்டது. இது தனியே ஐந்தைந்து மணித்தியாலங்களைக் கொண்ட (மொத்தம் 10 மணித்தியாலங்கள்) சிறு செயற்பாடாகும். இச் செயற்பாடுகளின் முடிவில் அனைத்து மாணவர்களின் பெறுபேறுகளும் கணிசமாக உயர்வடைந்திருந்ததுடன் இரண்டு மாணவர்கள் சித்தியடைவதற்கான அடிப்படைத் தேவைகளைப் பெற்றிருந்தனர்.

5.2 முடிவுகள்

தொகுத்து நோக்கும் போது நுண்ணலகுக் கற்பித்தலுடன் கூடிய படிமுறை வளர்ச்சி கொண்ட தலையீடுகள் வாயிலான பரிகாரக் கற்பித்தல் மேற்கொள்ளப்படும்போது ஒவ்வொரு படியிலும் மாணவர்கள் கற்றல் இடர்பாட்டிலிருந்து நீங்கி மேம்பட்ட பெறுபேறுகளை அடையக்கூடியவர்களாகக் காணப்பட்டனர்.

முதனிலை எண்ணக்கருக்களை விளங்கிக் கொண்ட நிலையில் இரண்டாம் நிலை எண்ணக்கருக்கள் இலகுவில் புரிவதாகக் காணப்பட்டது. பிரசினங்களைத் தீர்ப்பதற்கான உத்திகளை மேலதிக பயிற்சி, தொடர்செயற்பாடு, என்பன மூலம் மாணவர்கள் கிரகித்துக் கொள்ளுகின்ற போது மாணவர்களின் பெறுபேறுகளை மேம்படுத்துவனவாகக் காணப்பட்டன.

பிரத்தியேக வகுப்புகளில் கையாளப்படும் கற்பித்தல் முறை கற்றல் இடர்பாடுள்ள மாணவர்களை மேம்படுத்த உதவவில்லை.

பெற்றோர்களின் கல்வித்தரம், இருப்பிடம் (விடுதியா அல்லது வீடா என்பது) கற்றல் இடர்பாட்டில் நேரடித் தொடர்புகளைக் காட்டவில்லை.

5.3 பிரேரணைகள்

1. கற்றல் இடர்பாடுடைய மாணவர்களுக்கு அவர்களது பெறுபேறுகளை மேம்படுத்துவதற்காக விசேட திட்டங்களை பாடசாலைகள் அமுல்படுத்த வேண்டும்.
2. இத்திட்டம் தொடர்ச்சியும் பின்னூட்டலும் கொண்டதாகக் கண்காணிக்கப்பட வேண்டும்.
3. நுண்ணலகுக் கற்பித்தலுடன் கூடிய பரிகாரக் கற்பித்தல் முறை இத்தகைய மாணவர்களை மேம்படுத்த சிறந்ததாகும்.
4. பாடசாலைப் பணித் தொகுதியின் அளவு நிருணயம் செய்யப்படும் பொழுது பரிகாரக் கற்பித்தலுக்கான ஆளணித் தேவை கருத்தில் கொள்ளப்பட வேண்டும்.
5. ஆசிரியர் வாண்மைவிருத்திச் செயற்பாடுகளின் போது பரிகாரக்கற்பித்தல் செயற்பாடு முக்கியப்படுத்தப்பட வேண்டும்.

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CLOSING THE ACHIEVEMENT GAP IN A HIGH-POVERTY SCHOOL

Niki P. Fryou,
Principal,
Hattie Watts Elemetary School,
Patterson, La

Niki P. Fryou is principal of Hattie Watts Elementary in Patterson, La, USA. She is the 2013 Louisiana Elementary School Principal of the year. In this particular school, most of the students are not from affluent families. Hence their achievement level was low. But after Niki became the Principal in 2007 negative belief (economically disadvantage students couldn't perform well) has changed. This is her winning story:-

High poverty. High performing. These are two phrases that describe Hattie Watts Elementary today –but it wasn't always that way.

When I became assistant principal in 2006, there were large gaps between the performance of our white students and our black students and economically disadvantage students. One reason was a persistent lack of belief in our students. When someone would say our students should be performing at higher levels, some community members, faculty members and even parent would say: "We're not an affluent community, like so-and so. Our kids face real challenges at home and at school. They can't be expected to achieve at the same level as those kids."

- To dispel this negative stereotyping, our leadership team and faculty told our school community it didn't matter if our students came from an impoverished or affluent community. If you show children you believe in them, they can and will achieve. When I became principal the following year, I set out to instill that belief school wide. As a result, we've made significant progress and continue to earn accolades today.

Establish a Mission. Rallying the school community around a common mission and a belief that all students can succeed sets the foundation for success. We talk about our mission every day: *All teachers Teach! All students learn! All parents support! Academically We Succeed!*

Put the right people in the right place. When teachers love what they teach, it's contagious. We departmentalized grades 3-4 and created "partnerships of three," wherein one teacher teaches three maths classes, one teaches three English language art classes and one teaches three science and social studies classes. This is more motivating for our teachers, who love what they teach, and that enthusiasm spreads to students.

Monitor Students Progress. We regularly administer district assessments in core content areas. We also use a web based assessment platform called Achievement Series to develop and administer tests school-wide. In addition, our teachers use classroom assessments and tools for ongoing progress monitoring. If a student struggles, we provide targeted interventions. We then use the assessment tools to monitor how they respond, and adjust the instruction and interventions accordingly.

Make time for collaboration. We have job-embedded time each week for teachers to meet as a grade level or by department. Teachers discuss student performance, share ideas, and plan their instruction. This help us better address students' needs, while allowing teachers to share best practices and get support.

Improve and differentiate instruction. We strive to deliver balanced curriculum offering that develop the whole child, and our staff works to continually improve our instructional programme. To differentiate instruction, we use an array of technology tools and resources in our grade level instruction and Response to Intervention (R+I) programme. Thanks to an unwavering focus on meeting each student's needs, we're able to catch students before they fall through the cracks. As a result, we've reduced the number of special education referrals.

Build cognitive skills. Improving student performance is about more than building reading or maths skills. It's about developing foundation cognitive skills – memory, attention, processing and sequencing- that are central to all learning. All students in grades 2-3 work on an online reading intervention

called Fast Forward to strengthen key pathways in the brain that help them learn. This helps them pay closer attention to their teachers, absorb information faster and remember what they're taught. It's also used by struggling fourth graders and high-performing first graders, and as part of an after-school tutoring programme.

Build reading fluency. We use the DIBELS assessment to identify students in grades 2-4 who struggle with reading fluency. For these students, we use an on line tool called Reading Assistant, which uses speech recognition to correct and support students as they read aloud. We h've enjoyed seeing that as students increase their fluency and comprehension, they pursue more independent reading.

Maximize every minute. We used to lose instructional time every morning as students unpacked and settled into class. Now, we ring the bells five minutes early so when school starts, students are ready to learn. In our Response to Intervention programme, we built time into our schedule for tier 2 and tier 3 interventions. We also created after school tutoring programmes to provide assistance to struggling learners.

As a result of these efforts and many others, we've made significant progress in closing the achievement gap and improving student performance. In 2011 and 2012, the Louisiana Department of Education designated Hattie Watts Elementary as a high- performing, high – poverty school.

http://smartblogs.com/education

WHEN YOU FAIL, I FAIL – APPROACH TO LEADERSHIP

How Principals can help teachers grow professionally

Shawn Blankenship,
Principal,
Oklahoma Middle School

In This Together

School leaders need to prioritize their instructional leadership duties during school hours to work with teachers to provide meaningful honest feedback. "Every teacher regardless of performance level deserves meaningful feedback".

As school leaders, we must realize we are *In This Together*. if we can create the following conditions, we can experience success together.

Supervision of instruction occurs between 8.00 and 3.00 or it doesn't get done!

The power to change education, for better or worse is and always will be in the hands of teachers. Therefore, principals as instructional leaders must separate the managerial side of the principal ship with that of improving teacher effectiveness. No longer is it acceptable to sit in an office, work on state reports, complete teacher evaluations or engage in any other activity that can be completed outside the school day. An effective principal designates school hours for students, teachers and parents every day.

Try this

* Teach a class and model technology integration, differentiation, embedded interventions and other proven instructional strategies
* Seek opportunities for professional dialogue with your teachers to build collegiality. Social media can be an effective tool to think learn and grow together with your teachers
* Engage with a teacher to follow-up on his/her growth plan
* Cover a class to allow a teacher the opportunity to visit a colleague's classroom. Make sure to schedule a time for self reflection with the teacher

If your faculty refers to walkthroughs as "drive bys" failure may be just around the corner

One of the most important and mandatory responsibilities of a principal is making classroom visits. Frequent informal visits with a purpose add up to a true examination of what's happening in the classroom. However, what's happening in the classroom differs between a good principal and a great principal. A good principal spends much of the time at the back of the room focusing on teaching. A great principal spends valuable time at the front of the room focusing on students. The primary objective is to walk away with meaningful information that will promote teacher growth and enrich student's educational experience.

Try this

*Interview a student after class and ask probing questions to check for understanding. It's always good practice to ask questions once the natural forgetting process has begun. Don't be afraid to ask a question about last week's lesson to check for retention. Always share with your teacher your findings.

If your feedback is sugarcoated, expect failure to be blunt

Feedback must be as frequent and mandatory as classroom visits. As a principal, we must be courageous and provide honest, specific feedback that articulates the desired expectation. Instead of just stating a concern, provide a solution or strategy for improved performance. Every teacher regardless of performance level deserves meaningful feedback. Teachers feel unappreciated when the principal fails to provide any type of feedback.

Try this

*To be courageous simply say to yourself, "I must be honest straightforward and detailed because our students deserve the very best". This significant act of being honest separates an effective instructional leader from an ineffective instructional leader.

Belief Doesn't Come First; Action Come First

Talking about great ideas and actually putting ideas into action are two very different things. Many times good principals passionately

share their perspectives and points of view with a reluctant teacher, hoping this teacher will jump on board. A few years ago Lyn Hilt explained to me that to change one's belief we must first change one's behavior. We can do this by setting high expectations and developing a teacher growth plan.

Many principals are excellent at collaborating with a teacher to develop a well detailed growth plan but fail by not following up. A great principal intervenes immediately to address a concern rather than waiting for a post evaluation. A strong growth plan includes strategies for achieving the desired outcome contains indicators and measures of achievement and a completion time. Effective principals work collaboratively to develop an individual plan for every teacher and to provide support so that failure is almost impossible.

Try this

> *Embed professional development into every day. Search for ways to replace a teacher's duty with intensive, specific, professional development to move a teacher from good to great. Quit talking about such things as differentiation, technology integration and interventions and expect teachers to put these strategies into action. Once teachers experience positive results they will undoubtedly change their belief. Remember, as an effective instructional leader, it's your responsibility to assist and provide support to ensure a positive experience. Otherwise you both may fail!

Failure to build trust, sooner or later, will build failure

The best way to build trust is honesty. It is important to be straightforward with every teacher and do for one teacher as you would for any other. Provide support detailed feedback and individualized professional development for every teacher. Stretch and challenge every teacher to grow and to put proven strategies into action. Be sure to commend teachers when risks are taken, mistakes are made and lessons are learned.

If you can create conditions in which students, teachers and principals all hold themselves accountable for students learning in some capacity failure is almost impossible.

http://connectedprincipals.com/archives/10124

ABRAHAM LINCOLN'S LETTER TO HIS SON'S HEAD MASTER

Respected Teacher,

My son will have to learn I know that all men are not just, all men are not true. But teach him also that forever scoundrel there is a hero; that for every selfish politician, there is a dedicated leader. Teach him that for every enemy there is a friend.

It will take time, I know; but teach him, if you can, that a dollar earned is far more valuable than five found.

Teach him to learn to lose and also to enjoy winning.

Steer him away from envy, if you can.

Teach him the secret of quite laughter. Let him learn early that the bullies are the easiest to tick.

Teach him, if you can the wonder of books…But also give him quiet time to ponder over the eternal mystery of birds in the sky, bees in the sun, and flowers on a green hill-side.

In school teach him it is far more honorable to fail than to cheat.

Teach him to have faith in his own ideas, even if every one tells him they are wrong.

Teach him to be gentle with gentle people and tough with the tough.

Try to give my son the strength not to follow the crowd when every one is getting on the bandwagon.

Teach him to listen to all men but teach him also to filter all he hears on a screen of truth and take only the good that comes through.

Teach him, if you can how to laugh when he is sad. Teach him there is no shame in tears. Teach him to scoff at bidders; but never to put a price tag on his heart and soul.

Teach him to close his ears to a howling mob …. and to stand and fight if he thinks he's right.

Treat him gently; but do not cuddle him because only the test of fire makes fine steel.

Let him have the courage to be impatient, let him have the patience to be brave. Teach him always to have sublime faith in himself because then he will always have sublime faith in mankind.

This is a big order; but see what you can do. He is such a fine little fellow, my son.

Abraham Lincoln

Programme of Developing 1000 Secondary Schools
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Mahindodaya Technological Laboratory
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Language Lab
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மொழியியல் ஆய்வுகூடம்


ICT Centre

තොරතුරු හා සන්නිවේදන තාක්ෂණ මධ්‍යස්ථානය

தகவல் மற்றும் தொடர்புசாதன தொழில்நுட்பவியல் ஆய்வுகூடம்




Nenasa Distance Education Centre

නැණස දුරස්ථ අධ්‍යාපන මධ්‍යස්ථානය

நெனச தொலைக்கல்வி மத்திய நிலையம்


Mathematics Lab / Physics Lab
ගණිතාගාරය / භෞතික විද්‍යා විද්‍යාගාරය
கணித ஆய்வுகூடம் / பௌதீக விஞ்ஞான ஆய்வுகூடம்






Biology / Chemistry Lab
ජීව විද්‍යා / රසායන විද්‍යා විද්‍යාගාරය
உயிரியல் / இரசாயன ஆய்வுகூடம்