Chapter - IV

Development of Multimedia Courseware Package for Teaching Select Poems

4.1. Introduction

English as subject in the school curriculum is given great importance by the authorities, its study is compulsory for everyone. It should be learnt like a skill. In teaching/learning of English poetry occupies an important role. Poem is very important to learn the language better enjoyment which involves structure, figures of speech, rhythm, etc., Now a days or at present the traditional method like lecture method with inductive and deductive approach and several other methods are being followed. But these methods are incomplete in themselves. As a result, the students are facing lot of problems and difficulties in learning English poems, it is natural that the students lose interest towards learning English poem, and they are unaware about the usage of poetic language aspects of English learning.

Hence there is a need of alternative method based on ICT which can reach mass level is multimedia presentation among students that the most popular and convenient one. By using this tool the components of poetic language which involves complex ideas and concepts can be taught. Mere lecture approach is insufficient and do not develop images in the minds of the learners easily. Hence the investigator intends to Prepared a Multimedia
Courseware Package that may result in better perception than verbal abstractions.

4.2. Application of Multimedia Courseware Package

The investigator wanted to test the efficacy of Multimedia Courseware Package. The package prepared for three poems which contains animations, photoflashes, slideshows VLC Media player. By using Multimedia Courseware material, the investigator taught select poems to experimental group. Simultaneously, the investigator taught the same poems through traditional way of teaching to control group.

4.3. Analysis on Necessity of Application of Multimedia Technology to Teach English poems for Secondary school students.

4.3.1. To Cultivate Students’ Interest in Study

Nowadays, the stereotyped traditional teaching methods and environment are unpopular while multimedia technology featuring audio, visual animation effects naturally and humanely makes us more access to information besides, with such characteristics as abundant-information and crossing time and space, multimedia technology offers a sense of reality and functions very well, which greatly cultivates students’ interest and motivation in learning and their involvement in class activities.
4.3.2. To Improve Teaching Effect

Multimedia teachings enrich teaching content and make the best of class hours and break the “teacher centered” teaching pattern and fundamentally improve class efficiency. Due to large classes it is difficult for the teachers to have speaking communication. The utilization of multi-media sound lab materializes the individualized and co-operative teaching. The traditional teaching model mainly emphasized on teachers’ instruction, and the information provided is limited due to traditional classes. On the contrary, multimedia technology goes beyond time and space, creates more vivid, visual, authentic environment for learning English poems, stimulates students’ initiatives and economizes class time meanwhile increases class information.

4.3.3. To Improve Interaction Between Teacher and Student

Multimedia teaching stresses the role of students, and enhances the importance of “interaction” between teachers and students. A major feature of multimedia teaching is to train and improve students’ ability to listen and speak, and to develop their communicative competence, During this process, the teacher’s role as a facilitator is particularly prominent. Using multimedia in context creation creates a good platform for the exchange between teachers and students, while at the same time providing a language environment that improves on the traditional classroom teaching model. In this way, teachers in
the classroom no longer blindly input information and force students to receive it in a passive way.

4.4. Multimedia Courseware Package in Schools

Until the beginning of the 1980’s CAL in schools was very slow in getting underway. One of the prime reasons for this slowness has been the distinct shortage of resources (both software and hardware) available to support this type of activity in an adequate way. The involvement in school with CAL can occur at three distinct levels: primary, secondary and tertiary. Although some form of computer usage has been taking place in the latter areas for some time, it is only very recently that interest at the primary level has actively developed. Because of the importance of education about computers and the significant potential that they offer as teaching tools, many awareness projects have been initiated.

4.5. Instructional Technology and Sensory Learning Styles.

Computers offer students a multisensory smorgasbord such as sights, sounds, imagery, colour, textures, lines, shapes, videotapes, changes in volume, pitch, and so forth can be an exhilarating way to learn something new. Technology-based art forms may have a tremendous appeal to students, encouraging artistic expression among a diverse student population. These tools are a form of artistic communication for those who have been constrained by the traditional modes of written and verbal communication.
For the visual student, learning with technology may increase motivation and may foster creative problem-solving skills as they evaluate the many possible ways of expressing ideas. When computer Web sites or software programs display content pictorially, the images force one to stop using linguistic intelligence.

Many learners begin to doodle or to sketch what they are seeing; thus, they tap into preverbal information that might never have surfaced if the visual learning had not been engaged. If colour is added, an even stronger impact (brain connection) might be made. Mind mapping duplicates the way the brain works, (spatially, non sequentially, randomly, and in branches). This may allow the information it represents to become part of our long-term memory more easily. When used appropriately, the Multimedia can enhance the visual student's learning experience.

4.6. Rationale for Multimedia Use

Why would any instructor want to use multimedia materials in the classroom? To a certain extent, psychology instructors have adopted these new types of media simply “because they could.” As each improvement in technology became available (in many cases with the support of textbook publishers), instructors who saw themselves as “hip, cool, and hi-tech” quickly incorporated the new tools, correctly perceiving that slick multimedia presentations have a certain amount of entertainment value for students.
However, this rationale misses the point; in fact, the use of multimedia materials has substantial grounding in cognitive theory and research—although, as is often the case, the research evidence followed the widespread use of these materials rather than preceded it.

Several studies indicate that computer-based multimedia can improve learning and retention of material presented during a class session or individual study period, as compared to conventional lectures. Finally, a number of studies have suggested that student satisfaction and motivation is higher in courses that use multimedia materials.

However, not everyone is excited about the new technology. On the basis of negative anecdotes described on student evaluations and in discussions at professional conferences, we can conclude that some students and some instructors have had bad experiences with multimedia in the classroom. It is important to keep in mind that a poorly developed and/or executed use of multimedia can do more harm than good.

In our opinion, these negative experiences often seem related to lack of experience with computer technology, instructors allowing the program to direct the flow of the course, or to overly optimistic expectations about the media (or to underpowered projectors that necessitate dimming the room lights). Our own classroom experiences, combined with the research evidence,
lead us to summarize the potential pedagogical value and rationale for using classroom media in these three points:

1. It helps to raise the students interest level when students appreciate a variety of media/
2. It helps to enhance understanding the complex text.
3. It helps to memory skill.

4.7. Designing Multimedia Courseware Package:

Multimedia Courseware Package contains VLC media player, PowerPoint, Animation, and Text to Speech Convertor Software which help to change text line into speech form. The investigator prepared two PowerPoint Presentations for the two poems taken up for study (Earth & The Flying Wonder) and the poem A Sonnet For My Incomparable Mother, the investigator prepared VLC Media Player. Generally poem has some characteristic features such as Figures of Speech (Alliteration, Personification, Synecdoche) and Rhyming words, difficult vocabulary, figurative words etc. For these, the investigator used animations, moving pictures and slides except Alliteration and Rhyming words to teach the sample. Here the investigator used audio text for understanding Rhyming words and Alliteration sounds. For the sake of motivating the students’ pronunciation skill the investigator prepared audio format for these three poems. Because, everyone knows that thousand times of reading is equal to one time of hearing.
1. PowerPoint program and use of slides for information that is best presented visually.

2. Minimize text – Less is better. Narration is better than written words for learning and retention in a classroom context.

3. Minimize distractions – Plain is better than flashy.
   - Select non-distracting and simple backgrounds
   - Select simple, easy-to-read fonts (small fonts annoy audiences)
   - Select simple and smooth transitions.
   - Don’t include irrelevant illustrations, animations, or sounds.

4. Be strategic – A good picture is worth a thousand words and a bad one needs explanation. Choose pictures, graphs and videos that clearly demonstrate the point you want to make.

5. Make it yours – Customize publisher content. The slides that come with the book are outlines of the text. Delete slides to make room for yourself and add your own content to highlight your own objectives and style.

Creative applications of Multimedia that build on the students imaginative power which have developed to help the students enhancing learning power of poems. The use of Multimedia Courseware Packages adds multiple layers of meaning and interpretation of the poem. The investigator developed the Web Based Multi-media Language PowerPoint helps to understand the background of poetry content, figurative language, and give interest to learn the poems. The steps involved in the construction of PowerPoint is given in the below.

4.8.1. Summary of PowerPoint Presentations:

1. PowerPoint encourages the students immature thinking, with intricate ideas being dense into clear images

2. PowerPoint presentations seem designed to guide and reassure a presenter and also enlighten the audience.

3. PowerPoint displays the figurative language with exact showing the picture.

4. PowerPoint lends itself to poor typography and chart layout, especially by presenters who use poorly-designed templates and PowerPoint’s default settings;
5. PowerPoint’s outline format leads presenters to arrange material in an unnecessarily deep hierarchy, itself subverted by the need to restart the hierarchy on each slide.

6. PowerPoint’s “click-for-next-slide” mentality enforces a linear progression through the presenter’s hierarchy of ideas (whereas with handouts, readers could browse and explore items at their leisure).

Steps involved to develop the Multimedia Courseware Package

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4.9. Development of the Multimedia Courseware Package classified into two phase

I. Pre-pilot phase

II. Pilot phase

4.9.1. Pre-pilot Phase

It consist

- Item coverage
- Source of items
Item coverage

Multimedia Courseware Package, which contains animations, downloaded images, PowerPoint, photo flashes, text and audio sounds for the content of the poems etc.

Source of Items

- Get ideas from computer resource persons.
- Discussed with experienced school teachers.
- Discussed with school students.
- Review of research work.

By the careful analysis of the above source, materials were collected and formulated. Finally, formulated sources were pooled during the treatment, which contains 35 items.

4.9.2. Pilot Phase

The pilot study is concerned with screening the items selected during the pre-pilot study. During pre-pilot study, the investigator and some experts selected some items. Those selected items were once again given to the subject experts and technology experts to determine the suitability and objective of the items. Finally, these items were showed to the research supervisor. Based on the supervisor suggestion, some items were modified and reconstructed and unnecessary and ambiguous items were eliminated.
4.10. Administration of the Multimedia Courseware Package for Poetry

The investigator developed Multimedia Courseware Package to teach the select poems and finds out its effect on the achievement of students in the secondary school stage. The programme was based on Multimedia Courseware Package. Under this package, all aspects of the software are formatively evaluated and revised until the investigator has satisfied with its effectiveness. The Multimedia Courseware was administrated to the subjects for one month. The investigator freely exposed the multimedia courseware modules to the experimental group for forty-five minutes daily. Simultaneously, the investigator used traditional method to teach the same subject for control group. The traditional method included the routine lecture with loud reading the text of the poem, explanation and illustration, which is expository in nature.

4.11. Rationale for ICT Competency Framework for Teachers in TamilNadu

There is a commonly accepted view that Education systems will need to effect changes to prepare the students for lifelong learning in the emerging 21st Century Knowledge-Based Societies. The global shift towards Knowledge-based economies will require a change in the traditional view of the teaching and the learning process. It will require an understanding of how traditional (text based) and new (digital based) classroom technologies can be
used to facilitate learning environments in which students are engaged in the kind of team and project work that can enable them to take greater responsibility for their own learning and construction of knowledge. It will require a ‘re-conceptualization’ of teacher professional learning for a digital age.

Competence with technology integration is the basis for effective change. Teachers will need to lead by modelling effective ICT skills and lifelong learning strategies. Students will need to see their teachers applying technology in authentic and integrated ways that will enable students to engage in problem solving, project collaboration and in creatively extending their abilities and capacities to learn and construct knowledge. In November 2008 the UNESCO ICT-Competency Framework for Teachers (ICT-CFT) (UNESCO 2008) project was launched marking the culmination of many attempts made by governments, academia, and the private sector to establish a universal terminology and competencies for ICT use in teacher development. The framework promotes a teacher development model for effective ICT integration across six education system domains of Policy, Curriculum and Assessment, Pedagogy, ICT, Organization and Administration and Teacher Development. ICT competencies or standards are descriptions of what a qualified teacher should know and be able to do with technology in educational settings.
The adoption of an ICT competency framework has a number of advantages, listed in below

**Clarity:**

It will be clear for all to see what is required of a qualified teacher in terms of knowledge, skills, behaviours and attitudes for ICT use in educational settings.

**Comprehensiveness**

All in-service providers will have to ensure that they provide ICT professional development programs which meet national priorities as expressed in the competency framework (beginner, applying, proficient or transformative competency level priorities)

**Standards Minimum**

Student teachers, practicing teachers, administrators, teacher educators and other educators will be able to see the minimum ICT competencies required of them and will be able to place efforts towards achieving and maintaining those standards.

**Content and Pedagogy**

A competency framework can focus ICT integration on transformative practices at the secondary classroom level; where technology integration
changes content as well as pedagogy (what secondary school students learn as well as how they learn).

**Systemic Transformation**

A competency framework can focus ICT integration on transformative practices at the systemic level: leading to changes in the organizational and structural features of course provision.

**Confidence in teachers**

The general public can be confident that students are being taught by educators who have achieved agreed and transparent ICT competency standards.

**4.12. ICT Integration**

In planning for ICT integration in school education, policymakers need to begin by clarifying overall national education policy, objectives and approaches, as this should serve as the rationale and road map for technology integration in their education systems.

**4.13. Overview of Classroom Media Use**

The content of an course (and the supporting textbooks) is constantly evolving in response to advances in research and theory. The instructional methods and tools used in the course have also evolved, reflecting shifts in
both the preferred pedagogical approaches and in the technological infrastructure available to the instructor and the students.

Our goal in this study is to identify some of the best practices in computer-enhanced classroom instruction. Most of the subjects have been taught by using traditional method in the past decades and here the investigator had the best experience with instructional technology for teaching English poetry such as PowerPoint, Photo Flash, and Animations for secondary class students.


Literacy includes an understanding how texts are constructed (taking into consideration the author’s assumptions, the targeted audience, and the medium used) and how a variety of forms representation of work together to convey meaning. Students easily understand the poetic languages through multimedia packages like digital environments, different modes of expression or “modalities” and aural, visual, gestural, spatial, and linguistics come together in one environment. It helps to re-shape the relationship between printed word and image or sound. This change in the materiality of text is used to create the text inevitably. The use of new media adds multiple layers of meaning and interpretation of a poem.
The emergence of new technologies allows us to expand our ideas about how poetry might be performed in the classroom. Teaching poetry with new media enhances performance and it is a vehicle for exploration and learning, rather than a fixed product to be rehearsed and delivered as a final event. The program is very simple to use and provide students with simple instructions through the creation process. The investigator adds sound effects, a soundtrack of music, images and creates, lively atmosphere. Most significantly, these new media allow students get the meaning of the poetic line while seeing the slide show pictures.

Here the investigator has prepared PowerPoint presentation for two poems (Earth and The Flying Wonder). In this PPT consists of photo flashes, sound, effects etc., and the poem A Sonnet for My Incomparable, the investigator prepared VLC media player which contains three motivation songs about Mother.

To teach these poems, Earth and The Flying Wonder, the investigator used the Multimedia Courseware Package for the secondary students. And also the investigator added audio for these poems. First the investigator used only the audio voices (in the native accent) for the select poems. Initially, the students faced difficulties to understand, because the sample of study belonged to the students of Tamil medium and moreover most of the students have come from rural areas. The speed of the speech sound can be altered according to the convenience of the sample. So the
investigator altered the speed accordingly. Now they could understand the text voice and its pronunciation clearly.

4.15. Steps for Using Multimedia Courseware Package:

The Multimedia Courseware Package has three folders namely Earth, The Flying Wonder and Mother. Each folder consists of Text to Speech Convertor Software, text of the poem, rhyming words, alliteration words, and PowerPoint slideshows with background sounds.

First the ‘Text to Speech Convertor’ is to be installed then the text of the select poem will paste on the speech convertor software and click the play button. We can reduce the speed of the speech based on the students’ listening abilities. In the first section, the investigator played only the audio of the first stanza of the poem Earth. Then he used the project the PowerPoint slideshows to the students related to the first stanza.

The poem Earth consists of five stanzas and by using the Multimedia Courseware Package the investigator used to teach one stanza per hour. So it takes totally six days to complete the poem.
Rhyming words in the Poem: Earth

plains – mountains
valleys- mysteries

Alliteration Words

submission to the sun
discovered your dreams
and that which they could
with swords and spears
our wounds with oil and balsam
our winepresses with grapes
we extract your elements
are you an atom of dust
the feet of god.....journeyed from
who you are... what are you
my sight and my discernment
the longing in ... the everlasting life.
Summary of the Poem: The Earth is sublime and beautiful. Earth wakes up at dawn obediently and it surrenders to sun at sunset magnificently. Man walks over the plains and discovers and his dreams. He climbs on the mountains and admires the Earth’s majesty. He walks down the valleys and sees its calm and peace. He enters the caves and touches its mysteries. In the second stanza, Earth is personified and it is identified with Eternity and Time because no one has seen the beginning and the end of this globe. Man pierces the earth with his tools and plants on it. He throws all rubbish on the earth. He makes weapons of war. But Earth is not angry. Man plants bones and empties all wastes on it. But the Earth dresses his wounds, brings up trees and flowers and gives him wheat and grapes. It accepts all bad things. The poet calls the Earth ‘merciful’. So the poet concludes that man and the Earth are the same.
How beautiful you are, Earth

In this sentence the figures of speech is **synecdoche**. Synecdoche means the use of whole thing to represent the part of whole or one of the parts to represent the whole thing.

**For example:** The poem *Dove* written by John Keats, can be quoted.

In this poem, the poet uses the line “Sweet little red feet why would you leave me.”

Instead of mentioning the bird the poet used feet. Here the word **feet** is one of the parts of the body of the bird which represents the bird.

In the poem *Earth*, the poet describes the whole earth by using some parts of earth such as trees, flowers, valleys, mountains etc.
For eg. The word **Plain** means very clear to understand or easy to understand.

Another meaning of the word **Plain** is simple without anything added.

But here the word **Plain** means a **large area of flat dry land**.

In this sentence the word plain has different meanings.

By using pictures the students can understand the meaning of the word **Plain** exactly.
I have climbed your stony mountains

By using this picture the students understand the meaning of the word climbed.

I have descended into your valleys.

Valley means an area of low land between two hills usually with a river flowing through it.

Through this picture the students understand the meaning of the word valley.
I have entered into your caves...

I have entered into your cave

By seeing this picture the students understand the meaning of the word Caves

Cave means a large natural hole inside a hill.
Here the poet has used the figure of speech **Personification**.

**Personification** attributes life to inanimate objects to abstract qualities. Here the poet says, ‘**We pierce your bosom with swords and spears..**’ i.e., people dig the land with spears and swords. But instead of the word land, the poet uses the word **bosom**. The word **bosom** means chest or heart. Man pierces the heart of the earth with swords and spears. Here the poet personifies the land (inanimate) to animate one( heart) which has human qualities.

By using this picture the students understand the word ‘**pierce**’ easily and exactly. The word ‘**pierce**’ means ‘digging or making a small hole’.
students easily understand the exact meaning of the word **bosom**. By showing this picture, the students realize how the Earth is exploited by people. When seeing this picture, the students understand clearly what the poet wants to say exactly.

And also the poet uses the figure of speech hyperbole. **Hyperbole** is a way of describing something by saying it is much bigger, smaller, worse etc than it is actually. Here the poet says, the people dig the land to cultivate. This is a normal thing. But the poet considers a normal thing in an abnormal way.
We plant your fields with skulls and bones

The word plant has multiple meanings.
For example, ‘plant’ is a living thing that has leaves and roots and it grows on earth. Plant is smaller than a tree. Another one meaning is begin or starting. But in this sentence, the word ‘plant’ has different meaning. According to this sentence, the word plant means sowing. For example, the farmer sowing the seeds on the land.

Here the poet means to say that people fight with each other and kill themselves during the war and they sow only bones and skulls on the earth. The students understand the difference between skulls and bones.

Cypress trees- a tree which has long and dark green leaves.

Willow trees- a type of tree that has long and thin branches and grows near or middle of the water. By seeing this picture the students understand the clear meaning of the words Cypress trees and Willow trees.
We empty our wastes in your bosom and you fill

Our threshing floors with wheat sheaves,

And our wine presses with grapes.

Students are able to understand the meaning of the lines by seeing the pictures. The poet says, people throw the waste things into your heart (land) but from them it gives wheat and grapes which are very useful for human beings. Here the students identify the figure of speech **Alliteration** easily by seeing underlined letters on the screen. And also the poet uses figure of speech **Hyperbole** in first line of the above passage. People throw the waste things in the land. This is an ordinary thing, but the poet says in an extraordinary way by saying people throw wastes things in earth’s heart.
We extract your elements to make
Cannons and bombs but out of
Our elements you create lilies and roses
How patient you are Earth,

By using these pictures the students understand the passage clearly. Here the poet says people take the materials to manufacture the cannons and bombs. But the earth creates lilies and roses. Here the students realize the generous and kind nature of Earth. And also they understand the meaning of the word Cannon by seeing the picture. They also identify the Alliterated words by seeing underlined lines on the screen.
Here, the poet uses the figure of speech **Personification** in the above line.

The word **patient** refers to being generous or kind. These words **Generous** and **kindness** are qualities of human beings. But the poet personifies these qualities to inanimate things **Earth**.

By seeing this pictures students understand the meaning of the word **kind** and **generous**.
In this poem, the investigator used two introduction songs about mother and finally for the poem, he used moving pictures with background sound effects.

Here the investigator used text to speech convertor software to produce the full text of the poem into audio form. It helps the students to understand the clear pronunciation. And another important one is the use text to speech convertor, the investigator pick out alliteration words change into speech form. It helps the students to motivate to learn.
Alliteration

ccontemplate my childhood

now and so I knnow

learned that ... long ago

your heart, your mind, your energy

all these.. throughout the you spent.. years

you loved me .... love strength and sweet security

then you.. the hardest thing

I try my best to be

A mother like the mom you were to me

you learned me...you raised me

think of all the things

separate and set free.

Rhyming words in the Poem: A Sonnet for My Incomparable Mother

know-ago

me-free

tears-years

soul-all

be-me.
The investigator prepared VLC media player to teach this poem for secondary school students. The package contains three motivation songs about the mother. It also contains Text to Speech Convertor which helps to change text to audio format. First, the investigator used to project the content of the poem in audio form and the investigator asked the students to listen carefully. Then the investigator used the VLC Media player for the same poem to teach. When the students visually seeing the pictures they could understand the text easily and enjoy sounds of the poem. This package gives real and natural environment to the students. With the use of this package the investigator takes two class hours to teach the poem for experimental group. The investigator gives some photos which are related to the poem.
I often contemplate my childhood, mom

I am a mother now, and so, I know

In this line the figures of speech is used by the poet. The figures of speech is Alliteration. Alliteration is the repetition of same sound at the beginning of each word. Here, Alliteration is under lined letter of the word in the following sentence. contemplate my childhood.

Through this pictures the students understand the poetic line.

Explanation:

The poet remembers how she was brought up by a loving mother. And the daughter thinks about her childhood memories. Now she knows how she brings up her child.
“Hard work is mixed together with fun

You learned that when you raised me a long ago

I think of all the things you gave to me:”

**Explanation:** the mother did the hard work by playing with her child. The mother taught how the hard work was done by playing way.

And also the students clearly understand the figure of speech **Alliteration** by mentioning underlined and bold font. When seeing these lines in screen the students may not forget the alliteration words.
Sacrifice, devotion, love, and tears,

Your heart, your mind, your energy soul-

All these you spent on me throughout the years.

Explanation: The mother gave her child sacrifice, devotion, love and tears. And she spent her heart, mind, energy and soul on her child.
I often contemplate my childhood, mom.

I am a mother now, and so I know...

Hard work is mixed together with fun.

You taught that when you raised me long ago.

I think of all the things you gave to me.

Sacrifice, knowledge, love and tears.
All these you spent on me throughout the years

You loved me with a never-falling

You gave me strength and sweet security.
And then you did the hardest thing of all:

You let me separate and set me free.
A mother like the mom you were to me.
The Flying Wonder

by Stephen Vincent Benet

Summary

Orville Wright and Wilbur Wright known as the Wright brothers run a bicycle repairing shop. They meet with accidents and hurt themselves. But with daring and devotion they persist in their endeavor. At last on 17 December Orville Wright takes off from Kitty Hawk and flies successfully in air. The daring attempt of the Wright brothers marks a beginning in the history of aviation.

Alliterations in the Poem: The Flying Wonder

said Orville Wright to Wilbur Wright
fun of flying
they glided here, they glided there
they sometimes skinned their noses.
of course not O!
the first real aeroplane really flow
and kingdoms may forget their kings
will men forget the wrights.

Rhyming words in the Poem: The Flying Wonder

trying-flying
grant-shan't
another-other
shop-pop
repairing-daring
noses-roses cheer it-sheer it
kings-wings.
Wright Brothers

"We were lucky enough to grow up in an environment where there was always much encouragement to children to pursue intellectual interests."
—Orville Wright

The Wrights had a "self-starter" arrangement. While working on the airplane, they made a machine shop to fabricate metal parts. They also built a wind tunnel to test the efficiency of the wings.

17 December 1903 at Kitty Hawk, NC: The Wrights built their first powered airplane. The pilot, Orville Wright, flew the plane 120 feet in 12 seconds.

In December 1908, the Wright brothers built a glider that was able to carry two passengers. This was a significant achievement in the development of powered flight.

In 1909, the Wrights built a larger glider and flew it for the first time. This was a major breakthrough in aviation technology.

1909: The Wright brothers received a patent for their invention.

1912: The Wright brothers opened a factory to manufacture airplanes.

1919: The Wright brothers sold their patents to the Ford Motor Company for $1 million.

1867—Orville Wright was born
1871—Orville and Wilbur Wright moved to Kitty Hawk, NC
1903—First powered flight
1909—First powered flight with two passengers
1912—Wright brothers sold their patents to the Ford Motor Company
1919—Wright brothers died

The Wright brothers were the first to achieve sustained, powered flight with a heavier-than-air machine.
<table>
<thead>
<tr>
<th>Orville Wright</th>
<th>Wilbur Wright</th>
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<tr>
<td><strong>Born</strong></td>
<td>(1871-08-19)August 19, 1871</td>
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<tr>
<td>Dayton, Ohio</td>
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<tr>
<td><strong>Died</strong></td>
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<td>(aged 76)</td>
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<td><strong>Nationality</strong></td>
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<td><strong>Ethnicity</strong></td>
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<td><strong>Education</strong></td>
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<td><strong>Occupation</strong></td>
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<tr>
<td><strong>Spouse</strong></td>
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<td><strong>Signature</strong></td>
<td>Wilbur Wright</td>
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<tr>
<th>Wilbur Wright</th>
<th>Orville Wright</th>
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<tr>
<td><strong>Born</strong></td>
<td>(1867-04-16)April 16, 1867</td>
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<tr>
<td>Millville, New Jersey</td>
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<td><strong>Died</strong></td>
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<td><strong>Ethnicity</strong></td>
<td>German, Dutch, English</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>completed 4-year high school</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td>editor, bicycle retailer/manufacturer, airplane inventor/manufacturer, pilot trainer</td>
</tr>
<tr>
<td><strong>Spouse</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Signature</strong></td>
<td>Orville Wright</td>
</tr>
</tbody>
</table>
Wilbert Orville at Kitty Hawk with the 1901 glider its note pointed skyward it had no tail.

Wilbur Wright just after landing the 1901 glider. Glider at kitty Hawk in North Carolina
Wilbur makes a turn using wing wrapping and the movable rudder October, 24, 1902