Technology Integration in Pre-Service Teacher Education: Process and Reflection

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Abstract

The paper focused on the experiences of pre-service teachers in the technology integration process. Analysis of their narratives and reflection papers showed the cognitive and emotional dimensions of the experiences as well as the intervening variables affecting these dimensions. Implications to technology integration implementation were drawn.
Introduction

- Technology in early childhood education, a boon or bane issue
- NAEYC Position Statement about technology and young children
- Philippine study- early childhood majors, not confident of their ability in integrating technology into the learning environment
Context- Philippines

- The Department of Education’s National Competency-Based Teacher Standards include strands pertaining to the skills of teachers to use technology for instruction (DepEd, 2006).

- Commission on Higher Education- Teacher Education Curriculum specified three technology-related courses, two educational technology courses and one more specific, Technology in Preschool Education course for the those specializing in preschool education (CHED, 2004).
Technology Integration Process in Preschool Classrooms

Observation Phase
- Observe children, routines, classroom processes

Planning and Preparation
- Consultation, lesson plans, materials

Implementation
- Lesson Demo

Reflection
- E portfolio
Technology-Enhanced Activity Plan

**Target Date**

<table>
<thead>
<tr>
<th>Month</th>
<th>Week</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>2nd</td>
<td>12th</td>
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</table>

**Activity Overview**

<table>
<thead>
<tr>
<th>Title</th>
<th>Telling Time</th>
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**Focus/Essential Questions**
The clock tells us what time it is.

**Unit Summary**
In this activity, the pupils should be able to identify the time shown using a conventional clock.

**Subject Area(s):** Mathematics

**Grade Level:** K-2

**Standards**

**Learning Outcomes**
Students will:
- Tell what the hands of the clock signify.
- Correctly identify the time shown.
- Correctly move the hands of the clock to indicate the time.

**Prerequisite Skills**
The pupils need to be familiar with reading time using analog clocks.

**Technology or Technology Integration Outcomes**
Students will:
- Be more familiar in using the computer to present time.
- Be able to navigate independently in the different programs given.
## Technology-Enhanced Activity Plan

### Activity Implementation

<table>
<thead>
<tr>
<th>Instructional Strategies</th>
<th>Grouping Options</th>
<th>Technology Scaffolds/Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher</strong></td>
<td><strong>Student</strong></td>
<td></td>
</tr>
<tr>
<td>1. Present the ebook to the pupils. The story should be presented in such a way that interaction between the teachers and the learners is encouraged.</td>
<td>1. The pupils will be asked to identify what time is shown in the different slides. After which, they will be asked to read the story as the slides progress.</td>
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<tr>
<td>2. The teacher will review the different parts of the clock with the students. He/she will ask the pupils what the hands of the clock are for.</td>
<td>2. The pupils will say the different parts of the clock and identify their functions.</td>
<td>Ppt of teaching part of the clock</td>
</tr>
<tr>
<td>3. The teacher will present the clock program and allow the children to maneuver the clock by themselves. Make sure that they get to take turns in doing so.</td>
<td>3. After they have read the instructions in operating the clock, they could take turns in operating the clock to the desired position.</td>
<td>If one of the pupils has difficulties in operating the program, the class could “coach” him/her. Keep in mind that this could get the class worked-up and that discipline should be maintained.</td>
</tr>
<tr>
<td>4. The teacher will ask the pupils one by one to play the time game program. While the others wait for their turns, they are to work on a hand-out given by the teacher.</td>
<td>4. The pupils are called upon one by one to play the clock game. Meanwhile, the others are to work on the clock face hand-out. They are to use clay to present the time assigned to them.</td>
<td>The teacher could give assistance to the students in making their clock. The numbering and spacing of the clocks can be a little tricky for children, thus they may require aid.</td>
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<tr>
<td>5.</td>
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</table>

### Approximate Time Needed

Approximately 1 hour and 30 minutes.

### Options for Accommodation or Differentiated Instruction

<table>
<thead>
<tr>
<th><strong>ELL / IP Learners</strong></th>
<th><strong>Highly-Capable Learners</strong></th>
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<tbody>
<tr>
<td>Delayed learners are to be instructed in one on one sessions. They are to be assisted in their areas of difficulty.</td>
<td>Advanced learners could be taught the quarter hands. They would be able to identify time signatures with quarters.</td>
</tr>
</tbody>
</table>
# Technology-Enhanced Activity Plan

## Assessment Strategy
The pre-assigned handouts and the time game could be used as assessment tools. From there, the teacher could see where the child has difficulty.

## Follow Up Activity
For their assignment, the children can be asked to create their own clocks using paper plates and popsicle sticks. Parents are to assist them in creating their clocks.

## Materials and Resources Required for Unit

### Supplies
- Computer
- Digital Projector
- Clay

### Technology – Hardware
(Click boxes of all equipment needed/change names as needed.)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Check</th>
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<tbody>
<tr>
<td>Computer(s)</td>
<td>☑</td>
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<tr>
<td>VCR</td>
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<tr>
<td>Projection System</td>
<td>☑</td>
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<tr>
<td>Printer</td>
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<tr>
<td>Tape Player</td>
<td></td>
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<tr>
<td>Camera</td>
<td></td>
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<tr>
<td>Digital Camera</td>
<td></td>
</tr>
<tr>
<td>Scanner (optional)</td>
<td></td>
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<tr>
<td>Video Conferencing</td>
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</tbody>
</table>

### Technology – Software
(Click boxes of all software needed/change names as needed.)

<table>
<thead>
<tr>
<th>Software</th>
<th>Check</th>
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<tbody>
<tr>
<td>Microsoft Word</td>
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<tr>
<td>Microsoft Front Page</td>
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<tr>
<td>Microsoft Excel</td>
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<td>Microsoft Internet Explorer</td>
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<tr>
<td>Microsoft PowerPoint</td>
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<tr>
<td>Microsoft Internet Explorer</td>
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## Author

<table>
<thead>
<tr>
<th>Full Name</th>
<th>Glenn Adrian Mapalad</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Name</td>
<td>Centro Escolar University</td>
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<tr>
<td>Email Address</td>
<td><a href="mailto:nightofdarkness@yahoo.com">nightofdarkness@yahoo.com</a></td>
</tr>
<tr>
<td>Date</td>
<td>March 12, 2009</td>
</tr>
</tbody>
</table>

## Optional Technology Extensions
None
The Best Birthday Gift Ever!

By: Teacher Maria Olna Funtanar
Singing a song at the beginning
zookeeper

- responsible for the feeding and daily care of the animals.
One-on-One Interactive Activity
Roaring like a lion after the demo
Sample E-Portfolio
Technology in the Preschool Portfolio

Maria Olna L. Funtanar

Teacher Nana
I am a Third Year student of Centro Escolar University taking up Elementary Education; Major in Preschool Education. The Education Program of the University have the following objectives for each year level which is the: G.U.R.O. Being in third year, I should be an epitomy of the letter R in the acronym which is Ready to teach. With that, this portfolio showcases my experience in our course: Technology in the Preschool. It was an experience filled with challenges, demands, creativity, fun and most of all fulfilment! Take a glimpse of my experience as you look through evidences in this portfolio. May you witness and even feel the joy I’ve felt in this great experience!
Research Questions

1. How may the cognitive dimension of the pre-service teachers’ technology integration experience be described?
2. How may the emotional dimension of the pre-service teachers’ technology integration experience be described?
3. What were the driving and restraining factors involved?
4. What insights did the students share about their experience?
Research Procedure

Input:
Data Mining: E-portfolios of the Pre-service Teachers on the Technology Integration Process

Process:
Analysis of the Pre-Service Teachers' Narratives and Reflections

Output:
Curricular Implications
Theoretical Framework
Kurt Lewin’s Field Theory

- Driving Forces
- Restraining Forces
- Cognitive Dimension
- Socio-emotional Dimension
- Technology Integration Process
Subjects of the Study

• 17 junior preschool majors who took the Technology in the Preschool course between 2008 and 2012. This comprised the five year period from when the course was first offered.

• The subjects were between the ages of 18-22 years old. There were 16 females and only one male.
Discussion
1. Cognitive Dimension of the Technology Integration Experience

- **Observation phase**: Gauging the preschooler’s developmental characteristics, interests and abilities challenged them to come up with developmentally appropriate technology enhanced materials and activities.

- **Preparation phase**: The pre-service teachers experienced challenges in their executive functions, particularly in planning, deciding and prioritizing tasks that they needed to do; in creating original stories that integrate the themes and identified skills for the lesson assigned to them; and in applying technology skills they have and also in learning more technology skills to meet the demands of the course.

- **Implementation phase**: problem solving, flexibility and alertness in coping with multi-tasks in the preschool classroom came out.

- **Reflection phase**: metacognitive skills were used to assess their own performance and draw insights.
2. Socio-emotional Dimension of the Technology Integration Experience

- **Observation phase.** Pre-service teachers expressed enjoyment of watching the children in the different parts of the day.

- **Planning and preparation phase.** They went through doubt and anxiety while thinking of how they will go about the technology integrations tasks. They also felt frustrated with several revisions they had to make.

- **Implementation phase.** Pre-service teachers described the experience as involving a “roller coaster” of emotions. Most of them felt nervous to begin the lesson demonstration. While most were nervous, they also felt excited sharing their work to the children. Most enjoyed interacting with the children.

- **Reflection phase.** They revealed feelings of satisfaction for others and dissatisfaction for some. Most of them felt happy expressing a stronger resolve to be in the teaching profession.
3. Intervening Variables

- Doing a lesson demonstration in a class of preschoolers. This caused anxiety to the pre-service teachers, most of whom had no experience yet in teaching young children.
Intervening Variables

**Children’s response and level of engagement.** The children’s responses reinforced the pre-service teacher’s confidence in teaching. Their anxiety and worry of whether the children will like them and what they prepared dissipated as soon as the children showed excitement, listened intently and participated actively to the pre-service teachers’ stories and activities.
Intervening Variables

- Receiving feedback and support from their university professor
  - Respondents initially felt discouraged when corrections and revisions were given. Later on however, they appreciated how the critiquing process helped them improve their work and make them more confident during the demo.
Intervening Variables

- **Having a supportive environment**
  - Family, friends, resource teacher and personnel

- **Faith in God**
  - Most of the respondents mentioned about praying and relying on God’s grace to do well in the lesson demonstration. This helped them overcome anxiety and to be inspired
4. Insights and Realizations

About oneself: The pre-service teachers
- realized they had potential to be a good teacher
- validated the skills they had in dealing with children
- identified areas of improvement in oneself
- saw the importance of enthusiasm in teaching
Insights and Realizations

on Teacher Skills: The pre-service teachers

• stressed the importance of being an intentional teacher as manifested in planning and deciding about what to do and how to go about the technology integration

• realized the importance of establishing rapport with the young children before any teaching and learning can happen.

• believed that they should be organized and prompt in preparing their lessons.
Implications to the Teacher Education Curriculum

• closer alignment of learning activities and requirements in technology courses to actual basic education curricula being implemented in schools;

• more technology integration in the other courses in the teacher education curriculum to allow modeling by the university professors and more opportunities for practice for the pre-service teachers; and

• intent focus on technology integration in the field study courses prior to student internship.
Conclusion

The cognitive and emotional dimensions of the pre-service teachers’ experience in the preparation and implementation of technology-enhanced lessons appeared to be influenced by an interaction of driving and restraining factors such as the pre-service teachers’ technology and planning skills, presence of support from the environment, and the response and engagement of the pre-schoolers. All these should be considered in the future for a more intentional implementation of the technology-integration process for preschool majors.
Thank you for listening.