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Exploring Pre-Service Teachers' Perceptions of Preparedness for Developing Higher-Order Thinking Skills at LUAWMS

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ABSTRACT

This study explores the perceptions of pre-service teachers regarding their preparedness to foster higher-order thinking skills (HOTS) in their future students, specifically within the context of LUAWMS. ,the study gathered data from 82 pre-service teachers through a structured ten-item multiple-choice questionnaire (MCQs) based on CTSA model, and in-depth, semi-structured interviews with a subset of 10 participants. These findings point to the need for teacher education programs to place a stronger emphasis on practical strategies for developing HOTS, including the integration of technology. The study also recommends that pre-service teachers receive more targeted training on Bloom's Taxonomy and instructional techniques that promote higher-level thinking.

Keywords: *Pre-Service Teachers, Perceptions of Preparedness, Higher Order Thinking Skills, Bloom's Taxonomy*

INTRODUCTION

For the sake of understanding learners in pre-service teachers' perceptions and preparedness regarding developing HOTS in the classroom. It is not enough, for learners to accomplish insignificant capability in areas such as understanding and writing and other skill in today's world. Apart from reaching nominal expertise, instructors also aim to develop what are commonly referred to as "higher order" intellectual skills that containing necessary knowledge, cognitive expertise and cross-curricular skills The most important objective of HOTS aptitudes is to help students develop their critical thinking skills at a higher level. The impact of their teacher education programs on their perceived preparedness in promoting these skills in their teaching practices is the aim of the study. (Diane M. Coffman, 2013)

In educational institutions, Higher Order Thinking Skills (HOTS) are essential. because these skills make students and teachers more confident and engaged in classroom activities as they go above the memorization of facts and boost students to participate in critical analysis, problem-solving, and creativity. By development of HOTS, teachers promote students' abilities to think beyond the apparent, promoting a deeper understanding of concepts and enhancing their cognitive capabilities. These skills are essential in preparing individuals for the challenges of the rapidly evolving global landscape, where flexibility and innovative thinking are highly prized. So, Higher Order Thinking Skills, or HOTS, really do a lot more

than just help students tackle tricky problems. They actually spark a love for learning that lasts a lifetime. . Despite years of efforts by schools to teach higher order thinking, research shows they have struggled to successfully accomplish this objective. (Yehudith Weinberger and Anat Zohar 2019).

When students learn to ask those deep questions and make connections between seemingly unrelated ideas, it's like they're building a toolkit for life. Honestly, HOTS lay the groundwork for creating well-rounded individuals who can think on their feet and make meaningful contributions to the world around them, especially as things get more complicated in modern society. In today's educational landscape, HOTS are crucial they emphasize the importance of critical thinking, problem-solving, and creative reasoning.

LITERATURE REVIEW

To explore this issue, various academic studies addressing challenges within the sector have been. Initially, a comprehensive analysis of the development of teacher opinions was undertaken to grasp the historical context of this emerging field. Subsequently, the concept of critical thinking was explored to appreciate its importance in education, alongside its complexities and areas of contention. So, one of the really early frameworks for looking at reasoning is, you guessed it, Benjamin Bloom's taxonomy. This guy is all about those higher-order cognitive skills, you know, like evaluation, synthesis, and analysis. If we want to understand how this whole field has grown over time, we really need to dive into how teachers see things. That's what this study was all about checking out how beliefs and thoughts have shaped teaching throughout the years. This way, they can keep an eye on how students are developing their thinking abilities (Charanjit Kaur Swaran Singh, 2020).

Moving on, we took a good, hard look at critical thinking. It's really mean in education is that the research got into the nitty-gritty, the importance, and the many debates around what critical thinking actually is and how it's used. There's a lot of variety in how people understand this cognitive process. And, yeah, the development of those higher-order skills like evaluation and synthesis really connects back to Bloom's ideas. Bloom's taxonomy is pretty handy for teachers, giving them a solid way to put together curricula, lesson plans, and assessments, breaking down the different cognitive processes involved. Plus, it's super important in helping students build their critical thinking skills, nudging them to get involved in some serious research, analysis, and problem-solving.

Conceptual Framework of Higher Order Thinking Skills

Higher Order Thinking Skills, or HOTS, really focus on getting students to develop their critical thinking and problem-solving skills, along with their ability to think about their own thinking what we call metacognition. It's pretty interesting how this whole idea is built on frameworks like Bloom's Taxonomy and Depth of Knowledge. Basically, it's all about moving beyond just remembering facts. You know, like, instead of just memorizing stuff, students are encouraged to synthesize information and create new ideas. It's a journey from simple recall to something way more complex and creative. By emphasizing practical application, collaboration, and effective communication, the goal is to adequately prepare students for success in complex and evolving situations. Assessment methods focus on evaluating not just memory, but also the application of knowledge in real-world scenarios, promoting an integrated approach to learning

The primary objective of the Higher Order Thinking Skills framework is to empower students with the tools necessary to think critically and respond adeptly to varied situations. As noted by (Khalid, et al, .2017) logical thinking, as a component of higher order Thinking skills, involves critically

analyzing ideas, content, or situations to elevate one's thinking level. This is achieved by skillfully applying cognitive structures and imposing high cognitive demands on them (West, J. 2023).

OBJECTIVES

This research is particularly focused on;

1. To explore the level of awareness among pre-service teachers about the higher order thinking skills at Lasbela university.

2. To identify the most effective teaching and learning strategies to promote higher order thinking skills among pre-service teachers at luawms.

Research Questions:

1. What is the level of awareness among pre-service teachers about higher order thinking skills at Lasbela University?

2. What are the most effective teaching and learning strategies to promote higher order thinking skills among pre-service teachers at luawms?

METHODOLOGY

The study is a survey in nature and uses a mixed research method. The individual questioning allowed acknowledgement of the participants' thoughts and knowledge approximately intellectual skills as they expressed their perceptions about critical thinking and the possible skills that helped shape these perceptions. Quantitative method provided a composite picture of participants' documentation of stages of rational, Bloom's Taxonomy, endorsed over their reactions to teaching setups.

Instruments

This study actually went about it using two key methods to gather information: first, there was a survey questionnaire, which, helped in collecting broader quantitative data. Then, they also did some semi-structured interviews, which are pretty cool for digging deeper into personal thoughts and experiences. It's interesting to see how these two different approaches can give us a fuller picture of what these future educators really think about their preparedness in this important area.

DATA ANALYSIS

Quantitative research focuses on statistics and graphics. (Sardana et al., 2023). The questionnaire was include Likert-scale items to measure various dimensions related to preparedness. The survey was distributed to pre-service teachers at LUAWMS.

Table: Descriptive Statistics of demographic variables

Descriptive Statistics						
Demographic variables	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Gender of students	82	1	2	1.45	.501	.251
Batch of the students	82	1.00	2.00	1.5366	.50173	.252
any teaching experience of students	82	1.00	2.00	1.4390	.49932	.249

Age of the students	82	1.00	2.00	1.0610	.24076	.058
Valid N (list wise)	82					

Demographic Variables

We looked into how pre-service teachers at LUAWMS feel about their readiness to encourage higher-order thinking skills, or HOTS for short. We considered a bunch of demographic factors like gender, age, and previous teaching experience. These factors really helped us get a clearer picture of how they understand HOTS, how well their teaching methods work, and the challenges they face when trying to promote these skills in their classrooms. Understanding these elements can really shed light on what's going on in teacher preparation programs.

Descriptive analysis Structured questionnaire will be developed based on relevant literature and research objectives to assess pre-service teachers' perceived preparedness in developing higher-order thinking skills.. Participation was choose by convenience sampling and privacy was assured. The interview questions was developed based on the findings from the quantitative phase and relevant literature. The interview questions was developed based on the findings from the quantitative phase and relevant literature. Participants was selected based on the results of the quantitative phase to ensure diversity in perspectives. . Qualitative data was analyzed using thematic analysis to identify recurring themes and patterns related to pre-service teachers' perceptions of preparedness.

QUANTITIVE DATA

The results from the distribution of correct answers can be discussed in relation to the study The data illustrates a wide range of proficiency among the participants, reflecting varying levels of preparedness for engaging with and applying higher-order thinking (HOT) skills. In the context of pre-service teachers' perceptions of their preparedness, the fact that the majority of participants (about 70%) scored between 0 and 3 correct answers suggests a considerable portion of pre-service teachers may not feel fully confident or prepared to develop and apply higher-order thinking skills. These lower scores could imply that many pre-service teachers are still grappling with basic comprehension and application tasks, which are foundational to HOT skills such as analysis, evaluation, and creation.

However, the group that scored 4 or more correct answers, constituting roughly 30% of the participants, demonstrates a stronger understanding and possibly greater confidence in engaging with tasks that require more advanced cognitive processes. This group may represent those pre-service teachers who feel more equipped to develop HOT skills in their future classrooms. The presence of a small percentage of high achievers who scored 8 or 9 correct answers (around 2.4%) might indicate a few pre-service teachers who are highly prepared and comfortable with the development and application of HOT skills, positioning them as potential leaders or exemplars within their cohort.

The findings indicate that, sure, some pre-service teachers at LUAWMS feel ready to promote higher-order thinking skills. But, you know, a good number of them might still need a bit more training or support. It's all about building their confidence and capacity to teach at those higher cognitive levels. Well, it could really help shape curriculum development and also guide specific interventions that focus on enhancing readiness in this vital part of education.

Table: Descriptive Statistics of Classroom Thinking skills Assessment (CTSA) model based Questionnaire:

Statistics of (CTSA) model based Questionnaire:											
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
N	Valid	82	82	82	82	82	82	82	82	82	82
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		2.0732	2.536	2.6098	2.146	2.9390	2.2195	2.4024	2.3902	2.4634	2.0488
Median		2.0000	3.000	3.0000	2.000	3.0000	2.0000	2.0000	2.0000	2.0000	2.0000
Mode		1.00	4.00	3.00	2.00	4.00	1.00	2.00	1.00	2.00	1.00
Std. Deviation		1.19444	1.156 8	.92638	1.043 6	1.14770	1.12244	1.02872	1.17333	1.00855	1.01717
Variance		1.427	1.338	.858	1.089	1.317	1.260	1.058	1.377	1.017	1.035

RESULTS OF QUALITITIVE ANALYSIS

This part, diving into the interviews I had with 10 interviews from my survey group. They brought in a bunch of different viewpoints on how pre-service teachers feel about being ready to help students develop those higher-order thinking skills. The group was quite balanced, consisting of 6 guys and 4 gals. Their ages were between 23 and 25, which really helped to mix things up. Each participant offered unique insights shaped by their own experiences and maturity levels. Plus, they came from different batches like 2k21 and 2k20 which definitely added some variety to what they shared. Specifically, 5 participants were from the 2k21 batch, while 5 others represented the 2k20 batch.

The semi-structured interviews, consisting of 14 open-ended questions, allowed for an in-depth exploration of the participants' perceptions and experiences. This qualitative data, obtained from students willing to engage fully with the research process, complements the quantitative findings and highlights key themes and patterns related to pre-service teachers' preparedness to develop higher-order thinking skills.

Theme 1: Conceptual Understanding and Preparedness to Teaching Higher Order Thinking Skills (HOTS)

Participants demonstrated a clear theoretical understanding of HOTS, frequently referencing skills such as analysis, evaluation, and creation. Most of them distinguished between lower-order thinking (e.g., remembering, understanding) and higher-order thinking (e.g., applying, synthesizing). They identified HOTS as integral to fostering critical thinking in students, reflecting an understanding of Bloom's Taxonomy.

However, participants were able to articulate these concepts, some felt their exposure to practical applications of HOTS was limited. Although they valued the importance of HOTS in modern education, many pre-service teachers recognized a gap between their theoretical knowledge and their ability to apply these skills in classroom settings. When asked about their preparedness to teach HOTS, responses were mixed. One participant noted,

"I understand the theory, but applying it in the classroom is a challenge."

Participants generally agreed that while LUAWMS offered valuable insights into critical thinking and student-centered learning, more practical exposure was needed. Some so, it turns out that a lot of the participants felt a bit, well, unready when it came to assessing higher-order thinking skills (HOTS) in their students. They weren't quite sure how to support these skills across various levels of education. One student even mentioned,

"I can explain HOTS, but I'm not really sure how to put them into practice efficiently."

Theme 2: Influence of Coursework and Teacher Education Program

Participants shared their thoughts on some courses that really helped them get a grip on Higher Order Thinking Skills (HOTS), like those that dive into educational psychology, critical thinking, and teaching methods. But here's the thing: a lot of them felt that, sure, the information was solid, yet it leaned way too heavily on theory. They wanted to see more of the real-world application when it comes to teaching HOTS. One participant even put it simply:

"We need more hands-on training rather than just theory."

They did appreciate getting introduced to various methods, like problem-based learning and group discussions. However, there was a common belief that these strategies weren't really woven into the practical parts of their training as much as they should've been. Most of the folks who participated mentioned wanting more real-life examples and demonstrations to really understand how to encourage HOTS in their students. It's clear they're looking for a more balanced approach, blending theory with practice.

Theme 3: Support from Mentors and Faculty and Assessment of HOTS.

Most participants felt that LUAWMS faculty were supportive of their development, particularly in providing theoretical insights. However, they expressed a desire for more practical, hands-on mentorship, particularly regarding teaching HOTS. Mentorship that focused specifically on how to integrate HOTS into daily lessons and assess them in diverse classrooms was viewed as lacking. Pre-service teachers wanted more feedback on how to apply what they had learned in theory to real classroom challenges. Assessing HOTS was one of the areas where participants felt the least prepared. Many expressed uncertainty about how to evaluate students' development of higher-order thinking skills, given the abstract nature of these skills. Traditional assessments, such as exams, were seen as inadequate for measuring HOTS, and participants felt they needed more training on alternative assessment methods. One Student mentioned,

"We really need some more help with figuring out how to integrate HOTS into our course."

Theme 4: Suggestions for Improving HOTS Training

Participants had quite a few ideas about how to make the teacher education program at LUAWMS better, especially when it comes to HOTS, or higher-order thinking skills. They were like,

"We need more hands-on experience with teaching HOTS"

Most of the students thought having more mentorship around lesson planning and assessment would really help. And let's not forget, they suggested that HOTS should be woven into the curriculum more effectively. Also, they mentioned wanting clearer guidance during their practicum. I mean, who wouldn't want that? Getting specific feedback on how to help students develop those critical thinking skills is key. All of this really shows that they're looking for a better balance between theory and practice as they get ready to teach HOTS. One participant even put it this way:

"We need to enhance teacher education programs with more practical experience, focused mentorship, and better integration of HOTS."

Theme 5: how students handle (HOT Skills) across different subjects:

Most of participants felt that, students are actually capable of diving into these skills. However, there were some worries especially when it came to younger kids in primary and secondary schools. A lot of folks seemed to think that maybe these students aren't quite ready yet, it's like, they can probably handle it, but there's also that nagging doubt about whether they have the foundation needed to really succeed. Felt that students' ability to develop HOTS would depend on the instructional strategies and support provided by teachers. Different students are at different levels, and it's crucial to address that. A lot of folks in the discussion recognized how vital it is to weave higher-order thinking skills, or HOTS, into a bunch of subjects, not just stick them in one corner.

It's like, why limit these skills to just a few areas. We should be encouraging interdisciplinary approaches instead. This way, students can practice and apply those critical thinking skills in all sorts of situations, which is super valuable. One student even mentioned 'how integrating HOTS across various subjects is really important."

Theme7: Beliefs about Student Capabilities in Integration of Hots across Subjects

Participants in the discussion pretty much agreed that students can totally get into Higher Order Thinking Skills (HOTS). But, you know, there were some worries about whether students are really ready for this, especially those in primary and secondary school. A lot of folks thought that how well students pick up these skills really hinges on the teaching methods and support they get from their teachers. It kind of points to the fact that we really need to think about using more tailored instruction strategies that meet students where they are at.

Also, the participants highlighted how crucial it is to weave HOTS into different subjects instead of just sticking them in one place. This really emphasizes the need for interdisciplinary methods, right? It lets students use those higher-order thinking skills in all sorts of situations. One student even mentioned.

'How important it is to integrate HOTS across various subjects instead of keeping them limited to just a few areas.''

DISCUSSION

Let's dive into this discussion, which really digs into how different demographic factors like gender and teaching experience play a role in how ready folks feel. You know, it's interesting to see just how varied individual responses can be. This section isn't just about numbers; it also throws out some broader ideas based on the results that could help in making curriculum development, teacher training, and educational practices at LUAWMS much better. Well, they're all about sprucing up the curriculum, boosting professional development, and encouraging mentorship. Plus, there's a push for some fresh assessment strategies. All of this aims to better prepare future educators to help their students develop those higher-order thinking skills, which are super important. The insights gathered from the questionnaires and interviews provide a real deep dive into how aware the participants are, how ready they feel, and the hurdles they face when trying to promote HOTS.

The Classroom Thinking skills Assessment (CTSA):

Classroom Thinking Skills Assessment, or CTSA for short, is actually a pretty crucial tool for checking how well pre-service teachers understand and view cognitive engagement in their teaching activities. It's

designed to gauge their grasp of the different cognitive levels laid out in Bloom's taxonomy. This questionnaire has ten questions that tackle various cognitive tasks across subjects like social studies, math, reading, and science. This way, it gives a well-rounded picture of how these future educators see cognitive tasks in their classrooms.

Now, when the CTSA was used to look into pre-service teachers' thoughts about student involvement in these cognitive tasks, some interesting patterns burst up. The results showed that there were differences in how teachers linked tasks to cognitive abilities. For instance, tasks that needed higher-order thinking like investigating and assessing were often tied to problem-solving activities. In contrast, simpler skills, such as remembering, were linked more with tasks that required rote memorization, like those old multiplication tables. Interestingly, a lot of pre-service teachers struggled to consistently pinpoint the right cognitive levels

CONCLUSION

Results indicate that future educators at LUAWMS display a moderate level of preparedness in developing HOTS, with noticeable diversity in their confidence and capabilities. Quantitative analysis findings are reinforced by qualitative data, exposing disconnect between theoretical knowledge and practical application. While the teacher education program lays a solid groundwork, greater attention is essential in areas such as curriculum design, mentorship, and practical exposure concerning HOTS. The research suggests that LUAWMS needs to prioritize reforms in teacher education to sufficiently pre-service teachers prepare for 21st-century demands of classrooms. By addressing the identified gaps through curriculum modifications, enhanced mentorship, and continuous professional development, pre-service teachers can be better equipped to advocate for HOTS in their future roles.

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