DESIGN-BASED THINKING AMONG SECONDARY STUDENT-TEACHERS: INPUT FOR A CONTEXTUALIZED TEACHING PLAN

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ABSTRACT

Design Thinking (DT) has been increasingly integrated into higher education disciplines as a practical pedagogical approach to developing students' problem-solving skills for real-world challenges. With that, the study explored the design-based thinking among secondary student-teachers at the College of Education of Bataan Peninsula State University-Balanga Campus as input for developing a contextualized teaching plan. It specifically analyzed the profile of the student-teachers in terms of age and area of specialization; their design-based thinking in terms of understanding (empathizing and defining), exploring (ideating and prototyping), and materializing (testing and implementing); the significant difference in the design-based thinking of student-teachers when grouped according to their profile; and the development of a contextualized teaching plan based on the findings. Using the descriptive-developmental design of quantitative research, the data were gathered from 199 student-teachers (60 English majors, 71 Filipino majors, and 68 Social Studies majors) enrolled during the First Semester of the Academic Year 2022-2023. A researcher-made survey questionnaire was used as the data gathering tool, wherein the results were analyzed using descriptive (mean and standard deviation) and inferential statistics (t-test and F-test/ANOVA). The results indicated that there is a higher representation of female student-teachers, a notable interest in Filipino and English specializations, and a significant interest in teaching Social Studies subjects; the student-teachers exhibited highly manifested design-based thinking skills across all domains, reflecting their proficiency in empathetic research, creative idea generation, and effective solution implementation to address learners' needs; there is no significant difference in design-based thinking among student-teachers when grouped by sex, while a significant difference was observed in their area of specialization, highlighting the importance of targeted interventions and training to enhance these skills; and a contextualized teaching plan employing design-based thinking was developed, empowering student-teachers to create transformative learning experiences for their students.

Keywords: - *Design-based thinking, secondary student-teachers, contextualized teaching plan*

1. INTRODUCTION

1.1 Background of the Study

Aspiring educators, referred to as student-teachers, were expected to carry out essential tasks as instructional implementers in their future roles. However, once deployed in their cooperating schools, many still required assistance due to the demanding nature of their responsibilities, particularly in tasks such as selecting, designing, developing, and evaluating learning resources.

Design Thinking (DT) has recently been adopted in some higher education disciplines as a practical pedagogical approach to equip students with problem-solving skills for real-world challenges. Design thinking is characterized by a human-centered, iterative process that involves collaboration with others to understand, define, and solve

problems using empathy and creativity [1]. Consequently, design-based learning (DBL) offers opportunities to support students' understanding of the subject matter. While participating in DBL activities had shown improvements in student achievement, there was a need for convincing evidence on how well students could apply their knowledge in different situations [2].

However, higher education faces challenges in implementing design-based learning, especially when integrating technology into instructional design [3]. Teachers still needed to enhance their ability to provide readily available, high-quality learning resources to ensure effective learning [4]. Even within the Department of Education (DepEd), teachers cited various reasons for struggling to develop the necessary learning materials [5].

Educational scholars recognized design-based learning as a crucial approach, but there was ongoing research to determine which dimensions of design thinking mindsets supported conceptual learning [6]. Related teaching practices often included project-based learning, representing a significant shift in the traditional teaching and learning process, posing implementation challenges for many educators [7].

In recent years, design thinking gained importance in the context of the integrated STEM (Science, Technology, Engineering, and Mathematics) education movement [7], [8], [9], [10]. However, its application in non-STEM courses, particularly among student-teachers, remained limited in the existing literature.

Moreover, this study also aimed to contribute to achieving Sustainable Development Goal (SDG) No. 4: Quality Education. It sought to promote lifelong learning opportunities, improve literacy and numeracy skills, and enhance the overall quality of education worldwide. SDG 4 emphasized instructional design and teaching practices. By exploring the intentions and practices of student-teachers in utilizing design-based thinking, the study contributed to the development of effective instructional design teaching methods. It aligned with SDG 4's goal of improving educational quality by providing insights into strategies that empowered educators to create engaging and inclusive learning environments, ultimately leading to better educational outcomes and supporting progress toward achieving SDG 4.

The challenges faced in education prompted researchers to investigate design-based thinking among secondary student-teachers. The findings served as bases to develop a contextualized teaching plan that guided them in effectively using various instructional design models to create teaching-learning resources. This preparation equipped them for their internship and ensured effective instruction delivery.

1.2 Literature Review

Design-Based Thinking and Learning

Design thinking was a flexible and iterative process employed by teams to gain insights into users, challenge assumptions, redefine problems, and generate innovative solutions through prototyping and testing [11]. This approach to creative problem-solving was widely recognized as a valuable method for human-centered innovation [12], [13]. It had been referred to as a methodology, a culture, and a philosophy, all indicating that it was more than just a practice but a profound understanding of innovation processes [14], [15], [16], [17]. However, achieving this deeper understanding could be complex [18].

Design-based thinking (DBT) and design-based learning (DBL) aim to foster creative thinking among students. Scholars also emphasized that creative thinking is a crucial foundation for students and should be encouraged through effective instructional strategies [19].

In education, "Design Thinking in Schools" illustrated how leaders could adopt a design thinking mindset to identify problems and harness the ideas and energy of students and stakeholders to create unique and effective solutions within a single semester or school year [20]. Similarly, design thinking could enrich teacher education, allowing students with little prior teaching experience and career changers to explore their agency as innovators in the classroom, fostering excitement and appreciation for the art of teaching [21].

Education reforms underscored the significance of instructional design in enhancing student learning in the new K-12 education landscape. However, more research is needed to understand students' thought processes during highly complex design activities [22]. DBL has been shown to enhance student's critical thinking and problem-solving skills, and design thinking was considered a problem-solving methodology [23]. Notably, students' abilities to select and apply relevant science and math content and communicate logical reasoning in their design solutions were critical to successful problem-solving [24]. Design-based research was considered particularly suitable for designing effective learning environments [25], and there was a need to investigate how using design thinking tools could enhance creativity skills and motivation to think creatively among design undergraduates [26].

Instructional Design Teaching

The significance of high-quality design and course preparation increased with the growing use of technology in education [27]. While industry experience was valuable, more than relying solely on hiring faculty with such

experience may have been needed for skills-focused instruction. To be effective, policies should also prioritize training in teaching and instructional design [28].

Teachers' decisions regarding instructional design and technology integration notably impacted their teaching practices and student learning outcomes. The widespread integration of technology in learning environments was particularly evident during the global health crisis, responding to the evolving needs of students [29].

In more advanced studies, significant improvements in teaching and learning concepts for challenged students through instructional design have been demonstrated [30]. Similarly, it was found that instructional design positively influenced students' computational and creative thinking skills, benefiting their understanding of computational concepts and applications [31]. The importance of sequencing content in instructional design for meaningful learning has also been stressed [32].

The reviewed literature and the present study emphasized the importance of design thinking in education and its potential for fostering creative problem-solving. They highlighted the value of instilling a design thinking mindset among school leaders and teachers to identify and address problems, actively involving students effectively. Additionally, both sources recognized the significance of instructional design in enhancing student learning experiences and overall educational quality. They acknowledged the need for further research on students' thought processes and the impact of design thinking tools on students' creativity, critical thinking, and problem-solving abilities.

While the reviewed literature provided a comprehensive overview of design thinking and its applications in various contexts, the present study specifically focused on how student-teachers manifested design-based thinking. It delved deeply into the instructional design teaching model, offering how student-teachers manifested design-based thinking. The study improved the instructional design teaching model by shedding light on how student-teachers manifested design-based thinking before their actual practice teaching. Conversely, the reviewed literature covered a broader range of perspectives, including the effectiveness of instructional design in teaching various concepts, the role of technology integration, and the importance of content sequencing in instructional design.

1.3 Statement of the Problem

The study explored the design-based thinking among secondary student-teachers at the College of Education (COEd) of Bataan Peninsula State University-Balanga Campus as input for developing a contextualized teaching plan before their practice teaching.

It specifically answered the following:

1. How may the profile of the student-teachers be described in terms of:
   1.1 age; and
   1.2 area of specialization?
2. How may the design-based thinking of the student-teachers be analyzed in terms of:
   2.1 understanding (empathizing and defining);
   2.2 exploring (ideating and prototyping); and
   2.3 materializing (testing and implementing)?
3. Is there a significant difference in the design-based thinking of student-teachers when grouped according to their profile?
4. Based on the study's findings, what contextualized teaching plan may be developed?

2. METHOD

2.1 Research Design

This study employed a descriptive-developmental design of quantitative research. It focused on designing, developing, and creating instructional programs, processes, or products that met specific standards or criteria (IPL.org, 2022). As used in the study, after analyzing the design-based thinking among secondary student-teachers, a contextualized teaching plan was developed as the by-product of the study.

2.2 Respondents of the Study

The study purposively selected all the student-teachers in the COEd of BPSU-Balanga Campus as the target population. They came from the three areas of specialization – English, Filipino, and Social Studies (60 English majors, 71 Filipino majors, and 68 Social Studies majors), with a total population of 199.

2.3 Research Instrument

The main data-gathering instrument used in the study was a researcher-made survey questionnaire. The questionnaire consisted of two parts: (1) gathering information about the student-teacher profiles, including sex and area of specialization; and (2) assessing the design-based thinking intentions and practices of student-teachers, focusing on understanding (empathizing and defining), exploring (ideating and prototyping), and materializing (testing and implementing). The survey questionnaire has a reliability index of 0.9759, making it highly reliable among the target respondents.

2.4 Statistical Treatment

The quantitative data collected from the study were analyzed using SPSS, employing the following statistical measures: descriptive statistics, such as frequency count, percentage, mean, and standard deviation; and inferential statistics, including t-test and F-test/ANOVA (Analysis of Variance). Descriptive statistics were used to analyze the profile of student-teachers concerning sex and area of specialization, as well as their design-based thinking among student-teachers in terms of understanding (empathizing and defining), exploring (ideating and prototyping) and materializing (testing and implementing). On the other hand, inferential statistics were applied to determine significant differences in the design-based thinking intentions and practices of student-teachers when grouped according to their profile.

3. RESULTS AND DISCUSSIONS

3.1 Profile of Student-Teachers

Table -1: Profile of Student-Teachers

Sex	Frequency	Percentage	Area of Specialization	Frequency	Percentage
Female	151	75.88	English	60	30.15
Male	48	24.12	Filipino	71	35.68
Total	**199**	**100.00**	Social Studies	68	34.17
			Total	**199**	**100.00**

Table 1 provides the profile of student-teachers participating in the study, categorized by sex and area of specialization. Of the 199 student-teachers, 151 are female, making up 75.88% of the participants. On the other hand, 48 student-teachers are male, constituting 24.12% of the total population. This indicates a higher representation of females pursuing careers in education, aligning with broader trends of women's involvement in the teaching profession [33].

Regarding their area of specialization, most student-teachers (30.15%) specialize in English, with 60 individuals. Filipino is the second most common specialization, with 71 student-teachers, accounting for 35.68% of the participants. Social Studies is the area of specialization for 68 student-teachers, representing 34.17% of the total population. The significant interest in Filipino as an area of specialization may suggest a strong emphasis on promoting and preserving the Filipino language and culture in the educational context [34]. Similarly, many student-teachers focusing on English align with the global importance of English as a widely used language and reflects the demand for proficient English educators [35]. Additionally, the representation of student-teachers in Social Studies indicates a notable interest in teaching subjects related to society, history, and social sciences [36].

3.2 Design-Based Thinking among Student-Teachers

Table -2: Design-Based Thinking among Student-Teachers

Domains / Items	Mean	Std. Deviation	Interpretation
A. Understanding	**3.74**	**0.49**	**Highly Manifested**
A.1 Empathizing	**3.70**	**0.50**	**Highly Manifested**
1. Conduct thorough research about the learners to understand their behavior, personality, and characteristics.	3.70	0.53	Highly Manifested
2. Conduct a needs assessment of learners to profile them academically, ensuring awareness of their educational requirements.	3.71	0.50	Highly Manifested

3. Engage in active listening and observe the learners' interactions to empathize with their feelings, concerns, and perspectives.	3.69	0.48	Highly Manifested
A.2 Defining	**3.79**	**0.47**	**Highly Manifested**
1. Identify the specific needs of the learners, allowing them to meet such at their current level and build from there.	3.80	0.47	Highly Manifested
2. Pinpoint the root cause of any problems, issues, or concerns the learners may have, aiming to comprehend their perspective and where they are coming from.	3.78	0.48	Highly Manifested
3. Collaborate with colleagues and fellow educators to gain additional insights and perspectives in accurately defining the learners' needs.	3.78	0.46	Highly Manifested
B. Exploring	**3.78**	**0.48**	**Highly Manifested**
B.1 Ideating	**3.80**	**0.47**	**Highly Manifested**
1. Generate creative ideas tailored to cater to the specific needs of the learners through improvisation, contextualization, research-based practices, or innovation.	3.77	0.49	Highly Manifested
2. Think creatively and develop effective and efficient solutions to address the problems, issues, or concerns that the learners face.	3.82	0.46	Highly Manifested
3. Encourage open brainstorming sessions with students, allowing them to share their ideas and be part of the ideation process.	3.80	0.45	Highly Manifested
B.2 Prototyping	**3.76**	**0.48**	**Highly Manifested**
1. Transform creative ideas into feasible materials, outputs, or projects that address the unique needs of the learners.	3.73	0.51	Highly Manifested
2. Focus on creating real-life, tangible, and doable solutions that are practical and relevant to the problems, issues, or concerns the learners are encountering.	3.79	0.48	Highly Manifested
3. Seek feedback and suggestions from fellow educators and experts to improve and refine the prototypes before implementation.	3.75	0.47	Highly Manifested
C. Materializing	**3.78**	**0.48**	**Highly Manifested**
C.1 Testing	**3.79**	**0.47**	**Highly Manifested**
1. Implement the developed solutions, such as materials, outputs, or projects, to address the learners' needs.	3.81	0.47	Highly Manifested
2. Actively seek feedback from the learners to understand their experiences and ideas regarding the solutions' effectiveness and efficiency.	3.77	0.49	Highly Manifested
3. Collect and analyze data on the impact of the solutions, considering both qualitative and quantitative measures to assess their effectiveness.	3.78	0.46	Highly Manifested
C.2 Implementing	**3.77**	**0.49**	**Highly Manifested**
1. Roll out proven and tested solutions, including materials, outputs, or projects, to ensure continuous improvement.	3.76	0.50	Highly Manifested
2. Evaluate the continuity and sustainability of the proven and tested solutions, aiming for wide dissemination and usage to benefit a larger audience.	3.78	0.50	Highly Manifested
3. Collaborate with other educators and experts to integrate successful solutions into the curriculum.	3.77	0.48	Highly Manifested
Composite	**3.77**	**0.48**	**Highly Manifested**

The results in Table 2 indicate that the student-teachers from BPSU-Balanga Campus have displayed a highly manifested understanding and utilization of design-based thinking across all domains and items.

Under the domain of Understanding, which encompasses Empathizing and Defining, the mean score was 3.74 with a standard deviation of 0.49, signifying a high level of manifestation. In this stage, the student-teachers conducted thorough research about their prospective learners to understand their behavior, personality, and characteristics. They also performed needs assessments to profile the learners academically, ensuring they knew their educational requirements. Additionally, the student-teachers actively listened and observed to empathize with the learners' feelings, concerns, and perspectives.

Moving on to the Exploring domain, which covers Ideating and Prototyping, the mean score was 3.78 with a standard deviation of 0.48, indicating a highly manifested level. In this stage, the student-teachers demonstrated a high level of creativity by generating innovative ideas tailored to cater to the specific needs of the learners. These ideas included improvisation, contextualization, research-based practices, and innovation. Moreover, the student-teachers exhibited strong problem-solving skills as they thought creatively and developed practical and efficient solutions to address the learners' problems, issues, or concerns. They encouraged open brainstorming sessions with students, allowing them to share their ideas and actively participate in the ideation process.

Within the Materializing domain, encompassing Testing and Implementing, the mean score was 3.78 with a standard deviation of 0.48, indicating a highly manifested level. In this stage, the student-teachers showcased their ability to implement the developed solutions, such as materials, outputs, or projects, to address the learners' needs effectively. They actively sought feedback from the learners to understand their experiences and ideas regarding the effectiveness and efficiency of the solutions introduced. Additionally, the student-teachers collected and analyzed data on the impact of the solutions, considering both qualitative and quantitative measures to assess their effectiveness. Moreover, they demonstrated a commitment to continuous improvement by rolling out proven and tested solutions, ensuring continuity and sustainability for broader dissemination and usage.

Overall, the composite mean score across all domains and items was 3.77 with a standard deviation of 0.48, indicating a highly manifested understanding and application of design-based thinking among the student-teachers. These results highlight the student-teacher proficiency in employing design-based thinking as a valuable approach to problem-solving and instructional design in their future educator roles.

The said findings are consistent with the literature that emphasizes the importance of empathizing with learners to understand their needs and perspectives [30], defining learners' specific needs to provide effective instruction [30], generating innovative solutions [21], prototyping and developing tangible solutions [21], implementing the developed solutions to address the learners' needs [21], and gathering feedback and engaging learners in the evaluation process [21].

3.3 Significant Difference in Design-Based Thinking among Student-Teachers When Grouped According to Their Profile

Table -3: Significant Difference in Design-Based Thinking among Student-Teachers When Grouped According to Their Sex

Domains	Group	Mean	Std. Deviation	t-value	p-value	Remarks	Decision
Understanding	Female	3.75	0.50	0.49	0.64	Not Significant	Accept H_0
	Male	3.73	0.44				
Exploring	Female	3.79	0.49	5.88	0.00	Significant	Reject H_0
	Male	3.74	0.43				
Materializing	Female	3.78	0.50	0.57	0.59	Not Significant	Accept H_0
	Male	3.77	0.43				
Overall	**Female**	**3.77**	**0.57**	**1.83**	**0.08**	**Not Significant**	**Accept H_0**
	Male	**3.75**	**0.43**				

Table 3 presents the results of a study examining design-based thinking among student-teachers grouped according to their sex.

For the domain of Understanding, the mean scores for female and male student-teachers are 3.75 and 3.73, respectively. The t-value is 0.49, and the p-value is 0.64. The results indicate no statistically significant difference in design-based thinking understanding between the two groups, leading to the acceptance of the null hypothesis.

In Exploring, the mean score for female student-teachers is 3.79, and for male student-teachers, it is 3.74. The t-value is 5.88, and the p-value is 0.00, indicating a significant difference in design-based thinking exploring between

the two groups. As a result, the null hypothesis is rejected, suggesting that female and male student-teachers differ significantly in this domain.

For Materializing, the mean scores for female and male student-teachers are 3.78 and 3.77, respectively. The t-value is 0.57, and the p-value is 0.59. The findings suggest no statistically significant difference in design-based thinking between the two groups, leading to the acceptance of the null hypothesis.

In the Overall domain, the mean score for female student-teachers is 3.77, while for male student-teachers, it is 3.75. The t-value is 1.83, and the p-value is 0.08. The results indicate no statistically significant difference in overall design-based thinking between female and male student-teachers, leading to the acceptance of the null hypothesis.

In summary, the study shows that while there is a significant difference in design-based thinking in the Exploring domain between female and male student-teachers, there is no significant difference in Understanding, Materializing, and Overall. Overall, the findings suggest that female and male student-teachers demonstrate similar levels of design-based thinking in most domains, except for Exploring, where female student-teachers display a slightly higher mean score than their male counterparts.

These findings align with existing literature that emphasizes the importance of understanding learners' needs and perspectives for effective instructional design [30], creativity and open brainstorming sessions in the ideation process [21], and testing and gathering feedback to improve instructional design [21].

Table -4: Significant Difference in Design-Based Thinking among Student-Teachers When Grouped According to Their Area of Specialization

Domains	Group	Mean	Std. Deviation	F-value	p-value	Remarks	Decision
Understanding	English	3.75	0.45	2.18	0.15	Not Significant	Accept H_0
	Filipino	3.70	0.54				
	Social Studies	3.78	0.46				
Exploring	English	3.80	0.41	1.37	0.28	Not Significant	Accept H_0
	Filipino	3.76	0.52				
	Social Studies	3.77	0.50				
Materializing	English	3.81	0.40	10.79	0.00	Significant	Reject H_0
	Filipino	3.76	0.51				
	Social Studies	3.78	0.50				
Overall	**English**	**3.79**	**0.38**	**4.55**	**0.00**	**Significant**	**Reject H_0**
	Filipino	**3.74**	**0.51**				
	Social Studies	**3.78**	**0.53**				

Table 4 presents the study's results, which investigated the significant difference in design-based thinking among student-teachers when grouped according to their area of specialization.

In the domain of Understanding, the mean scores for student-teachers specializing in English, Filipino, and Social Studies were 3.75, 3.70, and 3.78, respectively. The F-value was 2.18, and the p-value was 0.15. The analysis indicates no statistically significant difference in design-based thinking understanding among student-teachers from different areas of specialization. Therefore, the null hypothesis (H0) is accepted, suggesting that the student-teacher area of specialization does not significantly impact their level of design-based thinking understanding.

Similarly, in Exploring, the mean scores for student-teachers in English, Filipino, and Social Studies were 3.80, 3.76, and 3.77, respectively. The F-value was 1.37, and the p-value was 0.28. The results indicate no statistically significant difference in design-based thinking exploring among student-teachers from different areas of specialization. As a result, the null hypothesis (H0) is accepted, suggesting that the area of specialization does not significantly influence the student-teacher level of design-based thinking exploring.

However, significant differences among student-teachers in English, Filipino, and Social Studies in Materializing were observed. The mean scores for these groups were 3.81, 3.76, and 3.78, respectively. The F-value was 10.79, and the p-value was 0.00, indicating a statistically significant difference in design-based thinking materializing among student-teachers from different areas of specialization. Consequently, the null hypothesis (H0) is rejected, indicating that the area of specialization significantly impacts the student-teacher level of design-based thinking materializing.

Moreover, in the Overall domain, encompassing scores from all three domains, significant differences were observed among student-teachers in English, Filipino, and Social Studies. The mean scores for these groups were 3.79, 3.74, and 3.78, respectively. The F-value was 4.55, and the p-value was 0.00, indicating a statistically significant difference in overall design-based thinking among student-teachers from different areas of specialization.

As a result, the null hypothesis (H0) is rejected, suggesting that the area of specialization significantly influences student-teachers overall level of design-based thinking.

In summary, the study found that the area of specialization only significantly affects student-teachers design-based thinking in the domains of Understanding and Exploring. However, there are significant differences in the domains of Materializing and Overall, indicating that student-teacher area of specialization plays a significant role in their proficiency in implementing and overall level of design-based thinking. These findings offer valuable insights into the impact of the area of specialization on design-based thinking among student-teachers and highlight the importance of addressing individual subject-specific needs in teacher education to promote effective instructional design and creative problem-solving skills.

These results align with the literature, which emphasizes that design-based thinking is a valuable approach in education that fosters creative problem-solving skills among students regardless of their subject area [12], [13], the use of design-based thinking as a practical pedagogical approach to equip students with problem-solving skills for real-world challenges in various disciplines [1], the use of instructional design in enhancing student learning experiences and educational quality in diverse subject areas [29], [22], and the use of instructional design teaching methods and the adoption of a design thinking mindset among educators to create engaging and inclusive learning environments [20], [21].

3.4 Developed Contextualized Teaching Plan Utilizing Design-Based Thinking

Table -5: Developed Contextualized Teaching Plan Utilizing Design-Based Thinking

Area of Specialization	Design-Based Thinking Phases	Activities	Resources Needed	Student Participation	Expected Output	Expected Outcome
Filipino	Understanding	Research Filipino culture	Library resources, internet	Students participate in group research and discussions	Group research findings on Filipino culture	Increased knowledge and appreciation of Filipino culture among students
		Explore traditional Filipino literature.	Literary works	Students analyze and discuss themes and moral lessons in Filipino literature.	Class discussions and analysis of literary works	Enhanced critical thinking and literary interpretation skills
	Exploring	Brainstorm ideas for promoting the culture	Brainstorming session	Students generate creative ideas to promote Filipino culture in school	List of creative ideas for promoting Filipino culture	Increased sense of cultural pride and awareness among students
		Create cultural exhibits and presentations.	Art materials, multimedia	Students create exhibits and presentations showcasing Filipino culture	Cultural exhibits and presentations	Improved presentation and collaboration skills
	Materializing	Organize cultural events in the school	Event planning resources	Students actively participate in organizing and presenting a cultural event.	Successful Filipino cultural event	Enhanced event management and teamwork skills
English	Understanding	Analyze literary themes and motifs	Literary works	Students discuss and analyze themes and	Class discussions on literary themes and motifs	A deeper understanding of literary analysis and

				motifs in English literary works		interpretation
		Explore diverse English-speaking cultures.	Multimedia resources	Students explore different English-speaking cultures worldwide	Presentation on diverse English-speaking cultures	Increased cultural awareness and global perspective among students
	Exploring	Brainstorm ideas for multicultural storytelling	Brainstorming session	Students brainstorm creative storytelling concepts inspired by cultures	List of creative storytelling ideas	Enhanced creative thinking and appreciation for cultural diversity
		Create multicultural storytelling projects.	Storytelling materials	Students craft stories or poems reflecting different cultural perspectives	Multicultural storytelling projects	Improved storytelling and creative expression skills
	Materializing	Collaborate on an English multicultural fair	Event planning resources	Students plan and organize a multicultural fair celebrating diverse cultures.	Successful English multicultural fair	Enhanced event planning and collaboration skills
Social Studies	Understanding	Investigate historical events	Research materials, maps	Students work in groups to investigate historical events and their impact	Research findings on historical events and their significance	Improved research and historical analysis skills
		Explore geographical factors in history.	Maps, geographical data	Students analyze how geography influenced historical events	Class discussions on the impact of geography on history	Enhanced understanding of geographical factors in historical contexts
	Exploring	Brainstorm ideas for community service	Brainstorming session	Students come up with creative community service project ideas	List of community service project ideas	Increased sense of social responsibility and community engagement
		Plan a community service project.	Planning materials	Students develop detailed plans for their chosen community service project	Comprehensive community service project plan	Improved project planning and management skills

	Materializing	Implement the community service project	Project resources, volunteers	Students execute the community service project and assess its impact	Completed community service project and impact evaluation	Enhanced project implementation and evaluation skills

In this contextualized teaching plan, student-teachers embrace design-based thinking as a powerful pedagogical approach to transform their classrooms into dynamic, engaging learning environments. By incorporating design-based thinking strategies, they aim to empower students to actively participate in the learning process and become critical thinkers and problem solvers.

The activities outlined in the plan are carefully crafted to promote active learning among students. Through hands-on research, discussions, and exploration of various topics, students are encouraged to take an active role in their learning journey. This approach enhances their understanding of the subject matter and fosters a sense of ownership and responsibility for their education.

Design-based thinking strategies also place a strong emphasis on critical thinking. Students are encouraged to think deeply and critically about their study content by analyzing literary themes, historical events, and geographical factors. They are challenged to identify patterns, draw connections, and evaluate different perspectives, honing their analytical and reasoning skills.

Collaboration is another crucial aspect of the teaching plan. Through brainstorming sessions, project planning, and executing community service projects, students learn to work together as a team and value each other's contributions. This collaborative learning environment nurtures essential social skills, such as communication, negotiation, and empathy, which are essential for success inside and outside the classroom.

By integrating design-based thinking into their instruction, student-teachers recognize the importance of preparing students for real-life challenges. Through exploring multicultural storytelling, analyzing diverse cultures, and planning cultural events, students are exposed to experiences that connect their learning to the real world. This approach cultivates a greater appreciation for cultural diversity and global perspectives, promoting a well-rounded education.

The expected outcomes of this teaching plan are manifold. With design-based thinking strategies, student engagement is expected to increase significantly. Students become active participants in their learning as they are motivated by meaningful and relevant activities. This heightened engagement creates a more positive and enjoyable learning experience for students and teachers.

Furthermore, the plan aims to enhance students' critical thinking abilities. As students delve into complex topics and engage in analytical discussions, they develop their capacity to think critically and make informed decisions. These skills are crucial for their academic success and future endeavors, enabling them to tackle challenges with confidence and creativity.

Finally, the plan seeks to foster a greater student appreciation for the subject area. Students develop a deeper understanding of the subject's significance by connecting their learning to real-life contexts and diverse perspectives. This newfound appreciation enriches their learning experience and instills a lifelong love for learning and exploration.

In general, implementing design-based thinking strategies in this contextualized teaching plan empowers student-teachers to create transformative learning experiences for their students. Promoting active learning, critical thinking, and collaboration paves the way for a more meaningful and impactful educational journey, equipping students with the skills and mindset needed to thrive in an ever-changing world.

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The following are the conclusions incurred from the results of the study:

1. There is a higher representation of female student-teachers, a notable interest in Filipino and English specializations, and a significant interest in teaching Social Studies subjects.
2. The student-teachers exhibited highly manifested design-based thinking skills across all domains, reflecting their proficiency in empathetic research, creative idea generation, and effective solution implementation to address learners' needs.

3. The study found no significant difference in design-based thinking among student-teachers when grouped by sex. However, a significant difference was observed in their specialization, highlighting the importance of targeted interventions and training to enhance these skills.
4. A contextualized teaching plan employing design-based thinking was developed, empowering student-teachers to create transformative learning experiences for their students.

Recommendations

The following are the intended recommendations for the conclusions made:

1. The University may encourage and support further male and female student-teacher representation, promote Filipino and English specializations, and provide resources for Social Studies teaching.
2. The University and/or continuing professional development providers may foster further design-based thinking skills among student-teachers through workshops and training for empathetic research, creative idea generation, and effective solution implementation.
3. The University, through the College of Education (COEd), may implement targeted interventions and training based on specialization to enhance design-based thinking skills.
4. The University, through the College of Education (COEd), may integrate the contextualized teaching plan employing design-based thinking into the curriculum, include it in the pre-departure orientation seminar (PDOS), and/or embed it in the student-teacher handbook/manual, guided by faculty and other teacher educators, with continuous improvement through feedback.

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