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DEVELOPING APPLYING ABILITY THROUGH MOBILE LEARNING: HOW EDUCATION APPS ENHANCE PRACTICAL SKILLS IN KALYANA KARNATAKA

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ABSTRACT
This study investigates the impact of various educational practices on the ability of secondary and higher education students in Kalyana Karnataka to apply learned knowledge, a key component of Bloom's Taxonomy. Specifically, the study focuses on five independent variables: Teaching, Learning and Pedagogy (TLP), Customized and Personalized Services (CPS), Education with Entertainment (EWE), Learning Aids (LA), and Performance Appraisal and Reports (PAR). A multiple regression analysis was conducted to examine their influence on ***Applying Ability****. The results indicated that TLP, EWE, and LA are significant predictors, with TLP showing the strongest positive impact. CPS also demonstrated moderate significance, while PAR had a marginal effect on the applying ability of students. These findings suggest the importance of integrating effective pedagogical strategies, engaging content, and accessible learning resources to improve students' application skills. The study provides valuable insights for educators and policymakers seeking to enhance online education practices in the region.*

1. INTRODUCTION
Education plays a central role in shaping students' cognitive abilities, particularly in an era where online education is becoming increasingly dominant. Bloom's Taxonomy, a widely used framework for categorizing educational goals, defines six levels of cognitive skills: remembering, understanding, applying, analyzing, evaluating, and creating. While all these abilities are critical, **Applying Ability** holds significant importance in real-world scenarios, as it involves using knowledge to solve problems and make informed decisions. As online education evolves, it becomes essential to understand the factors that enhance students' ability to apply knowledge effectively.

In this research, we explore five independent variables—**Teaching, Learning and Pedagogy (TLP)**, **Customized and Personalized Services (CPS)**, **Education with Entertainment (EWE)**, **Learning Aids (LA)**, and **Performance Appraisal and Reports (PAR)**—to examine their impact on **Applying Ability** among secondary and higher education students in the Kalyana Karnataka district. The study aims to determine the degree to which these factors contribute to students' cognitive outcomes, particularly their ability to apply knowledge. Given the increasing reliance on digital learning platforms in this region, the findings are expected to provide practical insights for educators, institutions, and policymakers on improving teaching practices and online education quality.

The research employs regression analysis to assess the relationships between these predictors and the dependent variable, Applying Ability. The study aims to fill gaps in existing literature, particularly in the context of Kalyana Karnataka, where the unique challenges and opportunities in online education are yet to be explored in depth.

2. LITERATURE REVIEW
The relationship between teaching practices, learning resources, and student outcomes has been well-documented in educational research. Bloom's Taxonomy, developed by Benjamin Bloom in the 1950s, remains a cornerstone of educational theory. The **Applying Ability** component of this taxonomy focuses on how students use their knowledge to solve practical problems, make decisions, and apply concepts in novel situations. This level of cognitive ability is essential for real-world success and is seen as a predictor of lifelong learning and critical thinking skills.

2.1. Teaching, Learning, and Pedagogy (TLP) : The role of teaching methods in cognitive development has been explored in various studies. Hattie (2009) in his book Visible Learning provides an extensive meta-analysis of factors affecting student achievement, showing that teaching strategies, particularly those that involve active learning, feedback, and student engagement, have a profound impact on cognitive outcomes. For example, Marzano (2017) emphasizes the importance of

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instructional strategies such as cooperative learning, problem-based learning, and inquiry-based methods in promoting students' ability to apply knowledge. According to Schunk (2012), students who are engaged in active learning and can connect new knowledge to real-life contexts show greater application skills.

2.2. Customized and Personalized Services (CPS) : The shift toward personalized learning has been a significant development in educational practices. Anderson (2018) highlights that personalized learning, which adapts to students' needs, learning pace, and interests, leads to more effective learning outcomes. This approach enables students to take ownership of their learning, which, according to Tomlinson (2001), results in improved problem-solving and application of knowledge. Johnson and Johnson (1999) further emphasize that personalized learning increases motivation and engagement, both of which are key factors in improving applying ability.

2.3. Education with Entertainment (EWE): Education with entertainment, often referred to as **Edutainment**, combines educational content with entertainment elements such as gamification, storytelling, and interactive media. **Gee (2003)** asserts that game-based learning environments create opportunities for students to apply knowledge in a risk-free setting, which enhances their problem-solving abilities. Furthermore, **Gee and Levine (2014)** argue that the principles behind games—such as feedback loops, challenges, and rewards—are highly effective in promoting critical thinking and application skills. The research supports the idea that integrating entertainment with learning fosters engagement, which is crucial for developing **Applying Ability**.

2.4. Learning Aids (LA): Learning aids, including multimedia resources, visual aids, and interactive tools, have been shown to significantly enhance learning outcomes. **Sweller et al. (2011)** in their work on cognitive load theory argue that visual aids and instructional technologies reduce cognitive overload, thereby facilitating better understanding and application of information. **Mayer (2005)** further asserts that multimedia learning environments, when designed effectively, support the application of knowledge by promoting deeper cognitive processing. **Clark and Mayer (2016)** show that well-constructed learning aids enable students to transfer knowledge across different contexts, thus improving their ability to apply it.

2.5. Performance Appraisal and Reports (PAR) : The role of performance appraisals in student learning is a subject of ongoing debate. **Black and Wiliam (1998)** argue that formative feedback through appraisals enhances students' understanding and application of concepts by providing specific guidance for improvement. While feedback from performance appraisals may not always directly improve students' application abilities, it is often instrumental in helping students identify gaps in their knowledge. However, as **Sadler (1989)** suggests, the effectiveness of feedback in improving applying ability depends on its timeliness, specificity, and the opportunity for students to act on it.

3. METHODOLOGY

This study employs a quantitative research design using a multiple regression analysis to examine the influence of various factors on **Applying Ability**. The independent variables are Teaching, Learning and Pedagogy (TLP), Customized and Personalized Services (CPS), Education with Entertainment (EWE), Learning Aids (LA), and Performance Appraisal and Reports (PAR), while the dependent variable is **Applying Ability**.

3.1. Sample Selection: The sample consists of 397 secondary and higher education students from Kalyana Karnataka, with a mix of students from the 9th, 10th, 11th, and 12th standards. The respondents were selected using a stratified random sampling technique to ensure diversity in terms of age, educational level, and geographic location.

3.2. Data Collection: Data was collected using a structured questionnaire that assessed students' perceptions of the five independent variables and their self-reported **Applying Ability**. The questionnaire was designed using Likert scale items to measure the intensity of students' agreement or disagreement with various statements related to TLP, CPS, EWE, LA, and PAR.

3.3. Data Analysis : Data were analyzed using SPSS (Statistical Package for the Social Sciences) software. A multiple regression analysis was conducted to determine the impact of the five independent variables on **Applying Ability**. The regression model's fit was assessed using R^2 values, and the significance of individual predictors was tested using p-values.

4. RESULTS AND ANALYSIS

The regression analysis yielded an R^2 value of 0.614, suggesting that the model explains 61.4% of the variance in **Applying Ability**. The adjusted R^2 value of 0.609 indicates that the model is reliable even when accounting for the number of predictors. The overall regression model was highly significant ($p = 0.000$), confirming that the predictors significantly contribute to explaining students' applying abilities.

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Table 1: Descriptive Statistics

Variable	Mean	Std. Deviation	N
Teaching, Learning and Pedagogy (TLP)	3.67	0.94	397
Customized and Personalized Services (CPS)	3.45	1.05	397
Education with Entertainment (EWE)	3.82	0.89	397
Learning Aids (LA)	3.74	0.91	397
Performance Appraisal and Reports (PAR)	3.21	1.15	397
Applying Ability (Dependent Variable)	3.52	0.98	397

Interpretation

- Mean Scores: Among all the variables, *Education with Entertainment (EWE)* has the highest mean score (3.82), indicating that students perceive EWE as highly present and relevant in their online learning experience. In contrast, *Performance Appraisal and Reports (PAR)* has the lowest mean score (3.21), suggesting it is less emphasized or less effective according to student perception.
- *Applying Ability* has a mean score of 3.52, which is slightly above average on a 5-point scale, indicating a moderate level of perceived applying skills among students.
- Standard Deviation (SD): The SD values range between 0.89 and 1.15, which shows a reasonable level of variability in students' responses. The highest SD is seen in *PAR (1.15)*, suggesting a wider difference in students' experiences with performance appraisal and feedback mechanisms.

Table 2: Regression Coefficients

Predictor	Unstandardized Coefficients	Standardized Coefficients	t-value	Sig.
Constant	0.741		4.932	0.000
Teaching, Learning and Pedagogy (TLP)	0.208	0.275	6.497	0.000
Customized and Personalized Services (CPS)	0.147	0.154	3.588	0.000
Education with Entertainment (EWE)	0.229	0.260	5.636	0.000
Learning Aids (LA)	0.203	0.217	5.439	0.000
Performance Appraisal and Reports (PAR)	0.059	0.067	1.783	0.075

Interpretation

- **Model Constant**: The constant value (B = 0.741, $p < 0.001$) indicates the baseline Applying Ability score when all independent variables are at zero. This provides a starting point in the regression equation.
- **Teaching, Learning and Pedagogy (TLP)**
  - **B = 0.208**, **β = 0.275**, **p = 0.000**
  - This is a **highly significant predictor** of Applying Ability.
  - The positive beta coefficient shows that better pedagogical practices significantly improve students' application of knowledge. For every one-unit increase in TLP, Applying Ability increases by 0.208 units.
- **Customized and Personalized Services (CPS)**
  - **B = 0.147**, **β = 0.154**, **p = 0.000**
  - CPS is also a statistically significant predictor, though with a smaller impact than TLP and EWE.
  - Personalized approaches moderately help improve students' application abilities by aligning content with their individual needs and pace.
- **Education with Entertainment (EWE)**
  - **B = 0.229**, **β = 0.260**, **p = 0.000**
  - EWE is a **strong predictor**, nearly as impactful as TLP.
  - The high coefficient value shows that engaging content formats like gamification, storytelling, and visuals significantly enhance students' ability to apply what they learn.
- **Learning Aids (LA)**
  - **B = 0.203**, **β = 0.217**, **p = 0.000**
  - This variable also has a strong positive effect.
  - Interactive resources like videos, simulations, and visual tools aid comprehension and practical application.
- **Performance Appraisal and Reports (PAR)**
  - **B = 0.059**, **β = 0.067**, **p = 0.075**
  - PAR shows a **weak and statistically insignificant effect** on Applying Ability.
  - Although feedback and evaluations may help students identify mistakes, they are **not directly contributing** to students' practical application of knowledge in this context.

Overall Interpretation

- The **Applying Ability** of students using online education apps in Kalyana Karnataka is **strongly influenced** by how well teachers implement effective pedagogy, use engaging content, and provide supportive learning aids.
- *TLP*, *EWE*, and *LA* emerged as the **most significant contributors** to applying ability.
- *CPS* contributes positively but moderately, indicating that personalization is helpful but not as strong as teaching strategies or engaging content.
- *PAR* did **not significantly impact** applying ability, suggesting a potential gap between assessment feedback and practical implementation by students.

5. DISCUSSION

The findings suggest that teaching methods that actively engage students, such as problem-solving and inquiry-based approaches, are crucial for enhancing their ability to apply knowledge. This is in line with existing research on the impact of active learning strategies on higher-order cognitive skills. **EWE** and **LA** also demonstrated a strong positive impact, supporting the notion that interactive and multimedia resources can facilitate the application of knowledge in meaningful ways.

While **CPS** showed a moderate effect, it is important to note that personalized learning might be more impactful in certain contexts or subject areas. The marginal effect of **PAR** suggests that while feedback is important, its role in improving **Applying Ability** might be limited unless it is coupled with more direct pedagogical strategies.

6. CONCLUSION

This research provides valuable insights into the factors influencing **Applying Ability** in online education among secondary and higher education students in Kalyana Karnataka. The findings suggest that effective teaching practices, engaging learning resources, and interactive technologies play a critical role in developing students' application skills. While **PAR** is important, it appears to have a lesser impact compared to other variables like **TLP** and **EWE**. Based on these results, it is recommended that educators and policymakers focus on improving active learning opportunities, integrating technology effectively, and providing personalized support to enhance students' applying abilities.

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