

Englsih Task (Evaluating Research Method)

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RnD: The Design and Development of a Multimedia Reading Application for Pre-schoolers as a Foundation in the Area of TVET.

- **Does the research type align with the research question?**

Yes, this research uses the Design and Development Research (DDR) approach with the ADDIE model, which is appropriate when the research question focuses on product development (in this case a multimedia application for learning). The ADDIE model includes analysis, design, development, implementation and evaluation phases, which ensures that this research not only produces a product, but also measures its effectiveness.

- **Is the data collection technique appropriate?**

Yes, the data collection technique used was purposive random sampling with a checklist questionnaire to experts in the creative fields of multimedia and pre-school education. This checklist was used to evaluate the interface design, content, and interaction of the app. This technique is appropriate because the focus of the research is on application development and evaluation, so it requires input from related experts.

- **Is the data analysis adequate?**

The data analysis techniques used were adequate. Data were analyzed using descriptive statistics (frequencies and percentages) to measure the experts' level of agreement with the developed app. However, if the study aims to provide a stronger justification of the app's effectiveness, it may be better if it is combined with a qualitative analysis of the experts' open-ended comments or feedback.

Experiment: Effects of jigsaw learning strategy integrated with computer simulations on grade 10 students' achievement and attitude and their correlations in chemistry.

- **Does the research type align with the research question?**

Yes, the type of experimental research corresponds to the research question. This study aims to measure the impact of Jigsaw Learning Strategy Integrated with Computer Simulations (JLSICS) on students' academic achievement and learning attitudes. Since experiments allow comparison between control and treatment groups, this method is suitable for evaluating the effectiveness of JLSICS in improving students' learning outcomes. In addition, the first research question (Q1) "What effects does the JLSICS use have on students' attitudes and academic achievement?" relates to the effects of JLSICS, which can be directly tested through experiments.

- **Is the data collection technique appropriate?**

The data collection techniques used are appropriate. The text mentions that the correlation between student attitudes and academic achievement can be measured by surveys and academic assessments (“*The correlation between students' attitudes and achievement in chemistry can be explored through quantitative measures, such as surveys and assessments.*”). Surveys are a suitable tool to measure students' attitudes towards learning with JLSICS. Academic assessments (exams or achievement tests) are also valid ways to measure the impact of JLSICS on student learning outcomes.

- **Is the data analysis adequate?**

The data analysis techniques mentioned are adequate, but more information is needed. This study aims to analyze the relationship between attitudes and academic achievement, which means statistical correlation is a suitable approach. It is mentioned that the relationship between the two variables can be tested quantitatively by the correlation method (“*The correlation between students' attitudes and achievement in chemistry can be explored through quantitative measures.*”). However, the text does not explain in detail the analytical techniques used (e.g., what statistical tests will be used).

Bibliometric: Trends Virtual Laboratory for Practical Learning in Vocational Education

- **Does the research type align with the research question?**

Yes, the bibliometric method aligns with the research question. This study aims to analyze research trends on virtual laboratory in vocational education. Bibliometrics is an appropriate method to examine trends in scientific publications as it allows analysis of publication patterns, number of publications per year, inter-topic relationships, and collaboration between researchers. The use of the Scopus database as a data source also supports the research objectives as Scopus covers a wide range academic publications.

- **Is the data collection technique appropriate?**

Yes, the data collection techniques used were appropriate. The data was taken from the Scopus database, which is one of the largest and most trusted scientific journal databases. The keywords used (“Virtual laboratory,” “Vocational,” and “Education”) are relevant enough to collect publications related to the research topic. The time span (2002-2023) is broad enough to see the trend of research development over time.

- **Is the data analysis adequate?**

The data analysis techniques used were adequate.

The data obtained was processed, analyzed, and visualized using a bibliometric approach, which included:

- ✚ Data processing (filtering, data organization)
- ✚ Bibliometric mapping using VOSviewer, which is a standard tool in bibliometric analysis to see relationships between concepts or authors in a field of research.
- ✚ Data analysis to draw conclusions about trends in virtual laboratory research in vocational education.

With clear steps and the use of appropriate bibliometric analysis tools, this technique can provide strong insights into research trends in this area.