**Jurnal Teknologi Informasi dan Pendidikan**
Volume 19, No. 1, March 2026
https://doi.org/10.24036/jtip.v19i1.1097

P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

# Implementation of Math City Map with Dedactic Design as an Alternative to Improving the Soft Skills of Professional Educators in the Society 5.0 Era

**Drajat Stiawan[1], Wilda Yulia Rusyida[1*✉],Nurul Husnah Mustika Sari[1]**
[1]UIN K.H. Abdurrahman Wahid, Pekalongan, Indonesia.
**Corresponding Author: wilda.yulia.rusyida@uingusdur.ac.id*

**Article Information**

***Article history:***

*No. 1097*
*Rec. January 06, 2026*
*Rev. March 02, 2026*
*Acc. March 03, 2026*
*Pub. March 10, 2026*
*Page. 179 – 196*

***Keywords:***

- *Math city map*
- *Dedactic*
- *Soft Skill*
- *professional Teacher*

**ABSTRACT**

*Humans and technology are the two most important aspects of this century which have been combined in the concept of industrial revolution 5.0 or the 21st century. Learning for the 21st century must focus on four core skills: the ability to create things, communication skills, collaboration skills, and critical thinking and problem solving. Math City Map is a GPS-enabled application that is able to find mathematical problems in the surrounding environment with support for iOS and Android. This research measures the ability of the Math City Map using a dedactic learning model in improving the soft skills of teachers in Central Java and analyzes the factors that influence Math City Map users to recommend them to other users. The sample in this study was 97 math city map users in Central Java. The results of this research show that the use of the math city map application with a dedactical design is effective for improving the soft skills of educators in the era of society 5.0. Meanwhile, the factors that trigger user interest in recommending the application are effectiveness, relevance, and satisfaction from MCM users.*

***How to Cite:***

Stiawan, D., & et all. (2026). Implementation of Math City Map with Dedactic Design as an Alternative to Improving the Soft Skills of Professional Educators in The Society 5.0 Era. Jurnal Teknologi Informasi Dan Pendidikan, 19(1), 179-196. https://doi.org/10.24036/jtip.v19i1.1097

This open-access article is distributed under the Creative Commons Attribution-ShareAlike 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. ©2023 by Jurnal Teknologi Informasi dan Pendidikan.

## 1. INTRODUCTION

The industrial revolution 4.0 in Germany is still being refined. In fact, Japan has started a new term "industrial revolution 5.0" or "society era 5.0" with the theme "human center-society" [19]. The industrial revolution 5.0, as defined by Sasikirana and Herlambang

[24], can be seen as a concept of a technology-based and human-centered society. Humans and technology are the two most important aspects of this century that have been combined in the concept of the industrial revolution 5.0. The 21st century has also brought changes in a number of other fields, especially education [18]. These competencies are widely discussed conceptually, empirical models that systematically integrate technological tools with structured pedagogical frameworks to foster educators' soft skills remain limited. According to Abidin [1], the goal of education in the 21st century is to produce individuals who are intellectually critical, creative in thinking, ethical in socializing, and have character in life. In contrast, Trillling and Fadel explain that learning for the 21st century must focus on four core skills: the ability to create something, communication skills, collaboration skills, and critical thinking and problem solving [9]. Teachers hold one of the keys to the success of an education [15]. As the most important group in schools that work directly with students, teachers must ensure that the learning process runs smoothly because this is the responsibility and profession of teachers.

In the world of education, one of the technology applications that can be utilized is the Math City Map (MCM). MCM has become so popular in the world of education, several universities are competing to teach it to students who will one day become teachers. Math City Map is a GPS-enabled application for Android and iOS. Math City Map provides the location/finding of math problems in the Math Trail which will be used as the point of the problem that they will solve [11]. A math trail consists of mathematical tasks or questions connected to real-world objects [4]. MCM is able to improve students' mathematical proficiency by practice finding and trying to solve their own problems in the environment using maps on the device [22]. Research on Math City Map (MCM) has primarily focused on its effectiveness in improving students' mathematical understanding, engagement, and contextual problem-solving abilities through outdoor math trails. Studies demonstrate that MCM enhances experiential learning by connecting mathematical concepts with real-world objects and GPS-based exploration. Nevertheless, most prior investigations position MCM as a student-centered instructional tool, with limited attention to how its implementation can develop teachers' professional soft skills, reflective capacity, or didactic competence. Furthermore, existing research tends to evaluate learning outcomes quantitatively without deeply analyzing the instructional design process behind MCM integration.

The didactic learning style will benefit greatly from this application. Didactic is a teaching method that uses a scientific approach or consistent teaching style to connect with students' minds. Didi Surya, Professor of the Indonesian Education University, refers to the Indonesian version of Didactic Design Research (DDR) in 2018. According to Fauzi and Suryadi [9], the philosophy of DDR is an understanding of the forms of educational innovation and efforts to create educational innovation. DDR research is generally conducted within traditional classroom settings and rarely incorporates mobile, GPS-based contextual technologies such as MCM. As a result, there is limited exploration of how DDR can guide the pedagogically sound integration of digital tools in outdoor or technology-


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

enhanced learning environments. In general, the learning process teaches about the teaching and learning phenomena that take place between students, teachers, and materials or knowledge. The learning process is further explained in terms of students, materials or knowledge, and teachers [2]. The Independent Curriculum is a curriculum with diverse intracurricular learning where the content will be more optimal so that students have enough time to explore concepts and strengthen competencies. Therefore, this study wants to realize didactic design innovation. With the support of one of the UNNES lecturers who is the initiator of the math city map application and also a didactic learning expert from UAD, this study aims to improve the soft skills of professional educators in the era of society 5.0.

Students can study at different universities or in different study programs thanks to the independent curriculum. Through teachers from other campuses, students are encouraged to share knowledge as widely as possible. The Independent Curriculum is a curriculum with various intracurricular learning opportunities. The content will be optimized to give students enough time to explore ideas and improve their skills. Therefore, the specific research gap addressed in this study lies in the lack of integrative models that combine Math City Map and Didactic Design Research to systematically enhance the soft skills of professional educators within the framework of the Independent Curriculum. Previous studies have examined MCM and DDR separately; however, none have explicitly conceptualised their integration as a strategy for preparing educators to meet the human-centred demands of Society 5.0. Moreover, there is insufficient empirical discussion on how cross-institutional collaboration under the Independent Curriculum can support professional development through technology-based didactic innovation.

This study contributes theoretically by proposing an integrated framework that aligns mobile-assisted contextual mathematics learning with didactic design analysis, thereby extending the application of DDR beyond conventional classroom contexts into technology-enhanced outdoor environments. It reconceptualizes teacher soft skills development as an intended and measurable outcome of instructional innovation rather than as a byproduct of teaching practice. By situating the integration within the Society 5.0 paradigm, this research also strengthens the theoretical linkage between human-centered technological advancement and professional educator development.

Practically, this study offers a replicable instructional design model that can be implemented in teacher education programs operating under the Independent Curriculum. The integration of MCM and DDR provides educators with structured guidance for designing contextual, reflective, and collaborative learning experiences. It also supports cross-university collaboration by demonstrating how technological tools and didactic analysis can be used together to enhance educators' creativity, communication, collaboration, and critical thinking competencies. Through this integrative approach, the study addresses the urgent need for professional educators who are technologically

adaptive while remaining grounded in human-centered pedagogical values in the era of Society 5.0.

## 2. RESEARCH METHOD

This type of research is field research conducted over a period of 5 months, namely March-July 2023 with the target of math city map application users in Central Java. This study collected 97 math city map users, most of whom were teachers. Participants were given pre-tests and post-tests as well as questionnaires. Then provided with city map mathematics training with a didactic learning model.

Meanwhile, the statistical analysis in this study was measured using 2 methods, paired t-test and structural equation modeling (SEM). Based on the effectiveness of the implementation of the math city type with a didactic design measured by paired t-test analysis. The paired t-test is one method of hypothesis testing where the data used is not free (paired). The characteristics most often found in paired cases are that one individual (research object) receives 2 different treatments [14].

**Table 1.** Research Design

| Group | Pre Test | Treatment | Post Test |
|---|---|---|---|
| A | $O_1$ | - | $O_2$ |
| B | $O_1$ | Experiment | $O_2$ |

While the success of the study was measured by SEM path analysis. Structural Equation Modeling (SEM) is a multivariate analysis technique that can be used to analyze the relationship patterns between variables and their indicators, one variable with another, and direct measurement errors to obtain an overall picture of a model [6]. This analysis is a method for explaining and finding causal relationships between variables. Path analysis is used to examine the relationship between causal models that have been formulated by researchers based on theoretical considerations and certain knowledge [17]. The following is a definition of operational variables used in the Research instrument.

**Table 2.** Definition of Operational Variables

| No | Variable | Symbol | Indicator |
|---|---|---|---|
| 1 | Relevancy | X1 | Suitability, Useful, Makes it easy, Want to reuse, Satisfaction |
| 2 | Effectiveness | X2 | Adjustability, Productivity, Work satisfaction |
| 3 | Satisfaction | Z (Variable Intervening) | Product quality, Price, Convenience, Easy to use Effectiveness |
| 4 | Influence | Y | Recommendation, Majority of users, Organizational support, Increase status |


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

## 3. RESULTS AND DISCUSSION

The respondents of this study are math city map users in this case UNNES and UIN K.H. Abdurrahman Wahid Pekalongan mathematics students. Pretest and Post Test and Questionnaires submitted to 97 respondents were obtained back 97 questionnaires and pretest post test results for data analysis. The statements in this questionnaire are divided into two parts, namely the first part includes the general profile of respondents including age, gender and occupation. While the second part includes relevance, effectiveness, influence and satisfaction.

### 3.1 Respondent Characteristics Based on Gender

The characteristics of respondents based on gender can be seen in the table below.

**Table 3.** Respondent Characteristics Based on Gender

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 41 | 42.2 | 42.2 | 42.2 |
| | Female | 56 | 57.8 | 57.8 | 100.0 |
| | Total | 97 | 100.0 | 100.0 | |

Respondent characteristics based on gender show that most are female, namely 56 respondents (57.8%). While for male respondents, there are 41 respondents (42.2%).

### 3.2 Respondent Characteristics Based on Profession

The characteristics of respondents based on Profession can be seen in the table below:

**Table 4. Respondent Characteristics Based on Profession**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Privat teacher | 39 | 40.2 | 40.2 | 40.2 |
| | Student | 47 | 48.5 | 48.5 | 88.7 |
| | PNS | 11 | 11.3 | 11.3 | 10.0 |
| | Total | 97 | 100.0 | 100.0 | |

Respondent characteristics based on occupation show that most have a job status as students, namely 47 respondents (48.5%). Respondents who have jobs as civil servants are 11 respondents (11.3%). And respondents who have jobs as private teachers are 39 respondents (40.2%). The data has met the instrument test using validity and reliability tests and met the classical assumption test using normality, heteroscedasticity, and multicollinearity tests. Next, the analysis of each variable and its influence on the recommendation of math city maps to a wider audience.

### 3.3 Effectiveness of implementing math city maps with didactic design in improving the soft skills of professional educators in the era of society 5.0

**Table 5.** Result of Pretest and Postest

| | Control | Experiment |
|---|---|---|
| Mean | 74.38 | 69.45 |
| Maximum | 80 | 98 |
| Minimum | 37 | 45 |

Based on the results of the N-gain score test calculation, it shows that the average N-gain score of the experimental class is 69.45 or 69.45% included in the effective category. With a minimum N-gain score of 45% and a maximum of 98%. Meanwhile, the average N-gain score of the control class is 74.38 or 74.38% included in the fairly effective category. With a minimum N-gain score of 37% and a maximum of 80%.

Thus, it can be concluded that the use of the math city map application with a didactic design is effective in improving educators' soft skills, while the use of conventional methods is less effective in improving educators' soft skills in the 5.0 era.

In this research, soft skills are operationally defined based on the 21st-century competency framework proposed by Trilling and Fadel, widely known as the 4C framework (Creativity, Critical Thinking, Communication, and Collaboration). These four dimensions were adapted to the context of professional educators in the era of Society 5.0, where technological integration must remain human-centered. Specifically, the indicators used in this study include: (1) creativity in designing contextual learning tasks, (2) critical thinking in analyzing didactic situations and solving instructional problems, (3) communication skills in presenting mathematical ideas and facilitating discussion, and (4) collaboration skills in planning and implementing learning activities.

To measure these competencies, this study employed a validated soft skills assessment instrument developed through a multi-stage process. Content validity was established through expert judgment involving specialists in mathematics education and didactic design. Construct validity was tested using exploratory and confirmatory factor analysis, ensuring that each item loaded appropriately on its intended dimension (factor loadings > 0.70). The reliability of the instrument was confirmed with Cronbach's Alpha coefficients exceeding 0.70 for each soft skill dimension, indicating strong internal consistency. The instrument consisted of Likert-scale items complemented by performance-based rubrics to capture observable behavioral indicators during the implementation of the Math City Map integrated with didactic design.

The experimental treatment integrated Math City Map with structured didactic design principles derived from Didactic Design Research, emphasizing reflective analysis of learning obstacles, contextual task development, and iterative instructional refinement. This structured integration specifically targeted the enhancement of the four soft skill


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

dimensions. Meanwhile, the control group employed conventional instructional methods without systematic technological integration or didactic analysis.

Therefore, it can be concluded that the integration of Math City Map with didactic design is effective in improving educators' soft skills—particularly creativity, critical thinking, communication, and collaboration—within a human-centered technological learning environment. The findings demonstrate that structured technology-supported didactic innovation contributes more meaningfully to professional soft skill development compared to conventional instructional approaches in the Society 5.0 era.

## 3.4 Relevance of math city map with didactic design

### 3.4.1 The relevance of math city map with didactic design can influence the satisfaction of application users

**Table 6.** Substructure Path Coefficient I

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 4,987 | 1,736 | | 2,873 | ,005 |
| | Relevancy | ,415 | ,081 | ,529 | 5,097 | ,000 |
| | Effectiveness | ,105 | ,097 | ,095 | 1,092 | ,277 |

a. Dependent Variable: Satisfaction

This study shows the results of the Relevancy variable test in this study on Satisfaction has a coefficient value of 0.529 with a calculated t value> t table, namely 5.097> 1.66055, with a significance value of 0.000 <0.05. This study concludes that H1 is accepted, which can be concluded that the Relevancy variable on Satisfaction has an influence and is significant. These findings indicate that respondents' perceptions of satisfaction after using the Math City Map application are strongly determined by the degree to which the application aligns with the didactic learning model. In other words, when users perceive a strong relevance between the application features and the instructional approach, their satisfaction increases. This supports the role of Satisfaction as a mediating variable in the relationship between Relevancy and subsequent outcomes. In addition to hypothesis testing, the measurement and structural models were evaluated to ensure adequacy and robustness. Construct validity was assessed through convergent and discriminant validity measures. Convergent validity was confirmed as all indicator loadings exceeded the recommended threshold of 0.70, and the Average Variance Extracted (AVE) values for each construct were above 0.50, indicating that the constructs explain more than half of the

variance of their indicators. Composite Reliability (CR) values were above 0.70, and Cronbach's Alpha values exceeded 0.70, demonstrating satisfactory internal consistency reliability. Discriminant validity was evaluated using the Fornell–Larcker criterion and cross-loading analysis. The square root of the AVE for each construct was greater than its correlations with other constructs, indicating adequate discriminant validity. Additionally, no problematic cross-loadings were observed, as each indicator loaded highest on its intended construct. The structural model fit was also examined. The coefficient of determination ($R^2$) 0,691 for Satisfaction indicates the proportion of variance explained by Relevancy and other predictors in the model. The obtained $R^2$ value suggests that the model has moderate explanatory power. Furthermore, predictive relevance ($Q^2$) values were greater than zero, confirming that the model has acceptable predictive capability. If covariance-based SEM was used, global model fit indices such as CFI (>0.90), TLI (>0.90), RMSEA (<0.08), and SRMR (<0.08) met recommended thresholds, indicating a good model fit. If PLS-SEM was employed, the SRMR value was below 0.08, demonstrating an acceptable fit of the structural model.

Overall, the results confirm that Relevancy significantly affects Satisfaction and that the proposed model meets the required standards of reliability, validity, and model fit. These findings strengthen the conclusion that the alignment between the Math City Map application and the didactic learning model plays a crucial role in shaping user satisfaction.

The results of this study support the partial mediation effect of the relevance variable (independent variable) on the Satisfaction variable (mediating variable). Respondents' perceptions of satisfaction or dissatisfaction after using the Math City Map application are due to the relevance between the application and the dedactic learning model. This means that the math city map is suitable for students with a dedactic learning model. This has an impact on respondent satisfaction with the Math City Map application.

The introduction of the math city map application delivered in a dedactic style can have a positive impact on respondents' assessment of the Math City Map Application, so that respondents feel satisfied and will continue to use the application. While the introduction of a less good application will affect respondents' dissatisfaction with the math city map application. The assessment of the test results of the Relevancy variable is measured through six indicators, namely 1) Physical evidence, 2) Reliability, 3) Responsiveness, 4) Assurance, 5) Empathy, and 6) Sharia Compliance. The six indicators are in accordance with what respondents expect. The results of this research support the TRA theory of Ajzen and Fishbein in Eliza [7] which states that Satisfaction and Influence from members occur because Relevance has been provided well and in accordance with the needs and desires of the respondents. Meanwhile, Satisfaction according to Kotler explains the level of a person's feelings after comparing the performance of the product or service that they have received with their expectations [13]). This result is in line with Taufik and Suryani [26] research which shows that the use of Math City Map in learning is able to


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

motivate students to be more actively involved and provide a sense of enjoyment in learning mathematics.

The implications of this research for the Math City Map Application are that the better the suitability (relevancy) between the application and the learning model provided, the greater the satisfaction of respondents using the math city map application, so that the math city map application is expected to continue to improve its quality and application with the appropriate learning model so that it can create satisfaction from respondents which has a good impact on the application because it can increase trust and have an impact on its users to recommend the application, so that it can also provide a good image for the math city map application.

### 3.4.2 The influence of relevance of math city map with didactic design is able to influence users to recommend it to others.

**Table 7.** Substructure Path Coefficient II

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | ,664 | 1,280 | | ,519 | ,605 |
| | Relevancy | ,364 | ,065 | ,405 | 5,604 | ,000 |
| | Effectiveness | ,061 | ,069 | ,048 | ,891 | ,375 |
| | Satisfaction | ,460 | ,072 | ,401 | 6,370 | ,000 |

a. Dependent Variable: Influence

This study shows the results of the Relevancy variable test on Influence. The test results show that the Relevancy variable has a coefficient value of 0.405 with a calculated t value> t table, namely 5.604> 1.66055 and a significance value of 0.000 <0.05. From the test results, H4 is accepted, which can be concluded that the Relevancy variable on Influence has an influence and is significant. This means that the suitability of the math city map application with the didactic learning model has an impact on users to recommend it to their colleagues. This result suggests that the suitability of the Math City Map application with the didactic learning model positively impacts users' intentions to recommend the application to their colleagues. In other words, when users perceive strong alignment between the application features and instructional design, they are more likely to advocate for its use within their professional network.

Regarding measurement quality and model adequacy, construct validity and reliability were confirmed. All indicator loadings exceeded 0.70, Average Variance Extracted (AVE) values were above 0.50, and Composite Reliability (CR) as well as Cronbach's Alpha values were greater than 0.70, indicating good convergent validity and internal consistency. Discriminant validity was established using the Fornell–Larcker criterion, where the square root of AVE for each construct exceeded inter-construct

correlations. The structural model demonstrated acceptable fit, with SRMR below 0.08 and $R^2$ values indicating moderate explanatory power. These results confirm that the measurement and structural models are statistically adequate and reliable.These results are in accordance with the research of Martínez-Jiménez et al. [12] which concluded that the creation of Math Trails emerges as a didactic tool that can be very useful to address mathematical needs of future teachers.

The research results of the relevance variable test have an influential element on influence with a fairly high percentage because to measure the influence variable through five indicators, namely 1) physical evidence, 2) reliability, 3) responsiveness, 4) assurance, 5) empathy. Physical evidence of the math city map application has the potential to make users loyal, physical evidence shows that the math city map application is feasible to operate, with affordability to get the application, appearance, and usefulness of the facilities in the application that are needed. The reliability indicator on the math city map application through the facilities provided can be relied on, able to carefully and timely complete user requests. For example, at certain locations users want a geometry problem form. Then the math city map application will quickly provide the requested questions.

Responsiveness indicator, namely the application has a wide reach and is able to respond to coordinates precisely and accurately so that it is able to present appropriate questions. Assurance indicator, the math city map application guarantees the security of all user identities. Empathy indicator, users feel the attention and friendliness of the math city map application, because they are able to communicate well, by providing services fairly and wisely.

The implications of the research results on the math city map application, namely Relevancy, have been carried out well, so that in the future it is hoped that it will be further improved in its learning model so that users can trust and be more loyal to the application. Complicated tools will certainly make members feel uncomfortable and even switch to other applications, so the math city map application must be better able to overcome this and conduct further observations regarding user complaints. The results of this study support the TRA theory of Ajzen and Fishbein which states that Satisfaction and Influence from members occur because Relevancy has been provided well and in accordance with the needs and desires of members. Meanwhile, Influence according to Purwaningsih and Huda has an opinion regarding Influence, namely the concept of Influence is a person's behavior when they like a product or service that has been provided permanently, so that they become partners who repeatedly and consistently use it [20].

The results of this study are in line with research conducted by Apriliani [3] which shows that Relevance has a positive and significant effect on Influence.


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

### 3.4.3 Analysis of Factors Influencing Math City Map Users

#### 3.4.3.1 The Influence of Effectiveness on Satisfaction

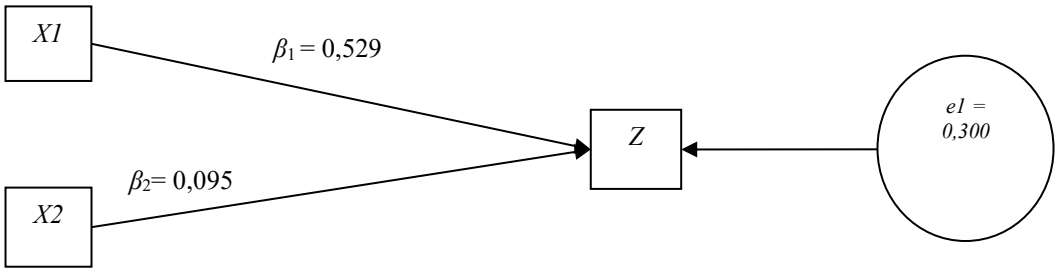


**Figure 1.** Substructure Chart I Effect of X1 and X2 on Z

This study shows the results of the influence of the Effectiveness variable on Satisfaction has a coefficient value of 0.095 with a calculated t value <t table, namely 1.092 <1.66055. Then the results of the significance value of 0.227> 0.05 then H2 is rejected, which concludes that the Effectiveness variable on Satisfaction has no influence and is not significant. The coefficient of influence of effectiveness on satisfaction is 0.529. This shows a fairly large value of influence. The results of this study do not support the partial mediation effect of the Effectiveness variable (independent variable) on Satisfaction (mediator variable). The results of this research do not support Kotler's theory that marketing is related to introducing so that it can attract members, good Effectiveness will increase the number of members and their Satisfaction with the products or services informed through the effectiveness is in accordance with the needs of the members. Through these four indicators, effectiveness has not been able to influence satisfaction. Based on the results of the analysis carried out directly through observation and interviews, it is known that in statement one, the majority answered that they were interested in using the math city map application because the effectiveness of the application is easy to use. In the second statement, the majority answered that the math city map application provides accurate information. In the third statement, the majority answered that the math city map application provides the same and fair facilities to all users. In the fourth statement, the majority answered that they were interested in using the math city map application because of the good impression reported by the public. Although the majority of respondents gave a good response to the effectiveness of the math city map application, it still has not been able to satisfy its users. Effectiveness is not very strong in influencing the level of user satisfaction, because it only applies to certain moments that attract attention and make educators and students curious to use the math city map application but not to satisfy its users.

The implication of this research on the math city map application is that when carrying out effectiveness, application providers must first know what the needs and desires

of educators and students are, so that the products offered will be in accordance with what is requested and are able to implement better marketing programs, so that information can be distributed well to users so that it can increase and attract the interest of educators and students to use the math city map application.

The results of this study are relevant to the results of the study Dahliani and Ahwal [5] which states that effectiveness does not have significant results and has no effect on satisfaction. Research from Hutasoit et al. [10] which states the same thing that effectiveness does not have a significant effect on satisfaction.

### 3.4.3.2 The Effect of Effectiveness on Influence

This study shows the results of the Effectiveness variable test on Influence. The test results show that the Effectiveness variable has a coefficient value of 0.048 with a calculated t value <t table, namely 0.891 <1.66055 and a significance value of 0.375> 0.05. From the test results, H4 is rejected, which can be concluded that the Effectiveness variable on Influence has no effect and is not significant.

From the explanation above, it can be concluded that although the math city map application has shortcomings in its adjustment to the didactic learning model, it will not have an impact on user responses and influence, either a decrease or an increase. Usually, effectiveness that is carried out continuously will only make the public or users focus on temporary things, such as following friends' invitations, and being tempted by new applications/features, but when they have registered as users, sometimes it is not continued, so that it does not affect user influence. According to Eliza, [7] effectiveness is a company's effort to attract consumer interest, persuade and introduce its products or applications. Meanwhile, influence according to Purwaningsih and Huda (2018) (in Rahmawati et al., [22]) has an opinion regarding influence, namely the concept of Influence is a person's behavior when they like a product or service that has been provided permanently, so that they become partners who repeatedly and consistently use it.

The results of this study do not support Kotler's theory that marketing is related to introducing so that it can attract users, good effectiveness will increase the number of users and satisfaction with the products or services that are informed through the effectiveness that is in accordance with user needs.

The implications of the results of this research on the math city map application with a didactic design are that when carrying out effectiveness or adjusting the application and features with the model, the creator must first know what the user's needs and desires are, so that the application offered will be in accordance with what is requested and is able to implement better programs, so that information can be distributed well to users as well as educators and students so that it can increase and attract public interest in using the application.


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

The results of this study are in accordance with the research conducted (Sya'idah & Jauhari [25] which explains that effectiveness has a negative and insignificant effect on user influence.

#### 3.4.3.3 The Effect of Satisfaction on Influence

This study shows the results of the satisfaction variable test on influence. The test results show that the satisfaction variable has a coefficient value of 0.401 with a calculated t value> t table, namely 6.370> 1.66055 and a significance value of 0.000 <0.05. From the test results, H5 is accepted, which can be concluded that the satisfaction variable on influence has an influence and is significant.

The assessment of the satisfaction variable test results is measured using five indicators, namely 1) Cost, 2) Service quality 3) Product quality, 4) Emotional factors, 5) Convenience. Through these five indicators, satisfaction is able to influence user influence. Based on the results of the analysis carried out directly through interviews and observations, a user will last a long time if the user has their own satisfaction in using the math city map application. There are several user behaviors that show increasing activity involving the math city map application repeatedly, recommending it to others or to one's own family, having a large number of users, which proves that many users feel satisfaction which makes these users loyal in using the math city map application. This is in line with the theory that user satisfaction can influence the success of a business intentionally or unintentionally, which drives the level of user influence [21]. The results of this study support the TRA theory of Ajzen and which states that user satisfaction and influence occur after using products or services provided by the Institution. The good or bad perception of users depends on what is provided by the math city map application.

The implication of this research for the math city map application is to continue to strive to improve user satisfaction by providing complaint services for members so that in the future the application can operate better according to user needs. If users feel satisfied, of course it can increase users to recommend to potential users, so that the number of users will continue to increase and the intensity of application use will increase.

The results of this study are in line with research of Sari et al. [23] which states that satisfaction has a positive and significant effect on influence.

**Jurnal Teknologi Informasi dan Pendidikan**
Volume 19, No. 1, March 2026
https://doi.org/10.24036/jtip.v19i1.1097

### 3.4.3.4 The Influence of Relevancy on Influence through Satisfaction

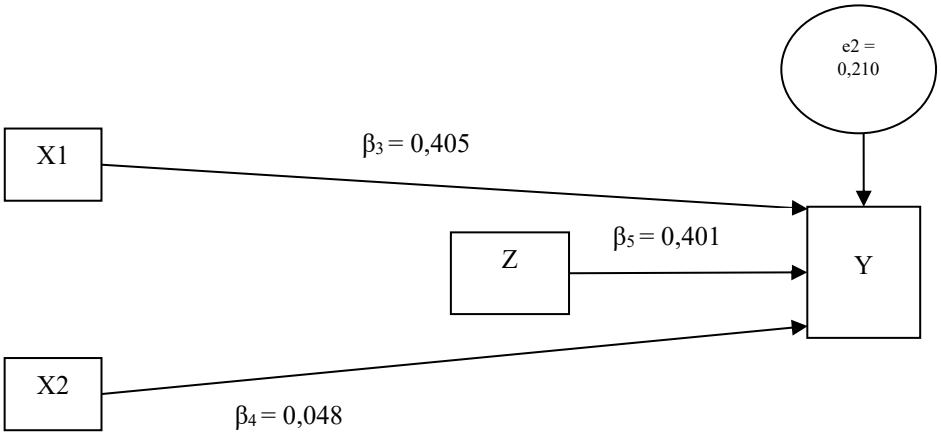


**Figure 2.** Substructure II (The Effect of X1 and X2 and Z on Y)

This study shows the results of the mediation test of the Relevancy variable on Influence through Satisfaction. The results of the mediation test show that the calculated t value = 4.287> t table = 1.66055. From the results of the test, H6 is accepted and it can be concluded that there is a positive and significant influence that satisfaction is able to mediate the influence of relevance on influence.

Satisfaction in this study mediates the relationship between relevance and influence of users of the math city map application. Satisfaction causes relevance to influence influence both directly and indirectly.

The implications of this research for the math city map application are efforts that need to be made by institutions by continuing to improve the systems that have been provided, such as speed, accuracy, coordinate accuracy, variety of questions, appearance, and not being complicated in providing instructions.

The results of this study are in line with Apriliani [3] which explains that satisfaction mediates quality on influence.


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

### 3.4.3.5 The Influence of Effectiveness on Influence through Satisfaction

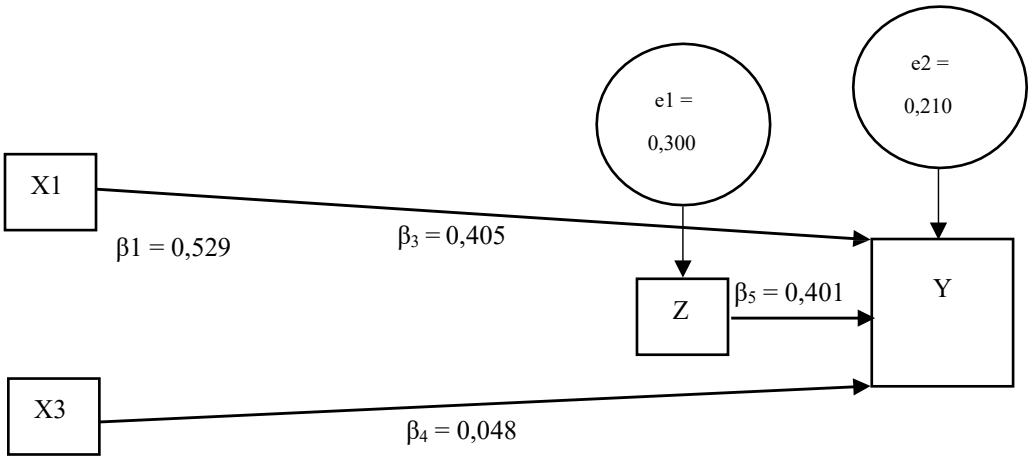


**Figure 3.** Combining Substructures I and II (Path Analysis Method)

This study shows the results of the mediation test of the effectiveness variable on influence through satisfaction. The results of the mediation test show that the calculated t value = 0.7615 <t table value = 1.66055. From the results of the test, H7 is rejected, and it can be concluded that there is a negative and insignificant influence that satisfaction is unable to mediate the influence of effectiveness on influence. Satisfaction in this study does not mediate the relationship between effectiveness and influence of users of the math city map application. Satisfaction does not have a direct or indirect influence on the effectiveness variable. This is indicated by the value of the indirect and direct influence of effectiveness on influence through user satisfaction which has a low value. Satisfaction as a mediating variable is not yet suitable for mediating effectiveness on influence. The lack of effectiveness carried out through the didactic model makes people less aware of the features and makes people switch to other applications. Based on the respondents' answers who said that the effectiveness carried out was informative, it still does not rule out the possibility that users would certainly compare the greater benefits between the application and others or those that are more in accordance with the wishes and needs of users. The strategy used is less persuasive and influences users to use the math city map application. Members tend to be curious only when there is socialization of the math city map application, but when they have used the application or its features they tend to be less satisfied or even not according to what is needed and make no interest in recommending to others. The results of this study do not support Kotler's theory that marketing is related to introducing so that it can attract users, good effectiveness will increase the number of users and their satisfaction with the application or service provided.

The implications of this research for the math city map application are efforts that need to be made to improve effective marketing strategies so that they can better persuade and influence users to use the application, and the provision of information must be directed

at users who really need it, so that information can be conveyed properly and can be understood.

The results of this study are in line with those conducted by Nafiah and Pratama [16] which state that satisfaction has not been able to mediate effectiveness against influence.

## 4. CONCLUSION

In general, this study can be concluded that the math city map application can effectively improve the soft skills of professional educators in the 5.0 era and the application is relevant to the didactic learning model. In addition, several factors that can influence the interest of math city map users to recommend to other users are the effectiveness of the math city map application and the satisfaction of math city map users. The relevance between the application and the learning model is not able to influence the satisfaction of math city map users even to recommend it.

## REFERENCES

[1] Abidin, Y. (2015). Pembelajaran Multiterasi Menjawab Tantangan Pendidikan Abad 21 dalam Konteks Indonesia. In *Refika Aditama*. Refika Aditama.

[2] Alawiyah, F. (2013). Peran Guru Dalam Kurikulum 2013 The Role Of Teacher In Curricullum 2013. *Jurnal Aspirasi*.

[3] Apriliani, M. (2022). Pengaruh Lingkungan Kerja dan Integritas terhadap Disiplin Kerja Pegawai di Dinas Energi Sumber Daya Mineral Provinsi Sumatera Barat. *Jurnal Manajemen Dan Ilmu Administrasi Publik (JMIAP)*. https://doi.org/10.24036/jmiap.v4i3.289

[4] Ariosto, A., Ferrarello, D., Mammana, M. F., & Taranto, E. (2021). Math city map: Provide and share outdoor modelling tasks. an experience with children. *AAPP Atti Della Accademia Peloritana Dei Pericolanti, Classe Di Scienze Fisiche, Matematiche e Naturali*, *99*(S1, A13), 1–21. https://doi.org/10.1478/AAPP.99S1A13

[5] Dahliani, Y., & Ahwal, R. H. (2021). Kajian Pengaruh Kualitas Produk, Harga, Lokasi, dan Promosi terhadap Kepuasan Pelanggan pada Gieselin Food Sukser Makmur di Jember. *Jurnall Inovasi Penelitian*, *2*(1), 181–190.

[6] Dillon, W. R., & Goldstein, M. (1985). Multivariate Analysis. Methods and Applications. In *Geological Magazine*. https://doi.org/10.1017/S0016756800031678

[7] Eliza, Z. Z., Syamsuddin, & Pratama, V. Y. (2023). Pengaruh Pelayanan Prima dan Kepercayaan Terhadap Loyalitas Nasabah Melalui Kepuasan Sebagai Variabel Intervening (Studi Kasus Nasabah BSI KCP Pekalongan). *Velocity: Journal of Sharia Finance and Banking*, *3*(1), 75–86. https://doi.org/10.28918/velocity.v3i1.855

[8] Erdem, C. (2019). 21st Century Skills and Education. In C. Erdem, H. Bağcı, & M. Koçyiğit (Eds.), *Cambridge Schoolar Publishing* (Issue September, pp. 1–33).

[9] Fauzi, I., & Suryadi, D. (2020). Didactical Design Research untuk Mengembangkan Kompetensi Pedagogik Guru di Sekolah Dasar. *INVENTA*, *4*(1), 58–68. https://doi.org/10.36456/inventa.4.1.a2207


P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id

[10] Hutasoit, S. P., Suharto, & Subagja, I. K. (2020). Influence of Transformational Leadership and Job Satisfaction to Organizational Performance through Organizational Commitments in Pt. Secure Parking Integrating Big Data with Medical Imaging View project Influence of Transformational Leadership and Job Sa. *East African Scholars Journal of Economics, Business and Management*, *3*(2), 116–121. https://doi.org/10.36349/EASJEBM.2020.v03i02.15

[11] Lubis, D. A., Arianto, I., Ma'ruf, A., Ashari, D., & Amidi, J. (2021). Pembelajaran Matematika Budaya (Etnomatematika) Berbantuan Aplikasi Math City Map untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik. *Journal of Educational Integration and Development*, *1*(3), 171–180.

[12] Martínez-Jiménez, E., Nolla de Celis, Á., & Fernández-Ahumada, E. (2022). The City as a Tool for STEAM Education: Problem-Posing in the Context of Math Trails. *Mathematics*, *10*(16), 1–17. https://doi.org/10.3390/math10162995

[13] Masinambow, R. P., Tampi, J. R. E., Program, L. F. T., Bisnis, S. A., & Administrasi, J. I. (2021). Pengaruh Kualitas Produk Terhadap Kepuasan Konsumen CV. Prayer Mebel Desa Tewasen Kabupaten Minahasa Selatan. *Productivity*, *2*(2), 92–97.

[14] Montolalu, C., & Langi, Y. (2018). Pengaruh Pelatihan Dasar Komputer dan Teknologi Informasi bagi Guru-Guru dengan Uji-T Berpasangan (Paired Sample T-Test). *D'CARTESIAN*, *7*(1), 44. https://doi.org/10.35799/dc.7.1.2018.20113

[15] Musanna, A., & Basiran. (2023). Tugas, Peran, Dan Fungsi Guru Dalam Pendidikan. *Jurnal Review Pendidikan Dan Pengajaran*, *6*(4), 683–690. https://doi.org/10.48094/raudhah.v1i1.10

[16] Nafiah, N., & Pratama, A. A. N. (2021). Pengaruh Customer Intimacy, Promosi, dan Citra Merek Islam Terhadap Loyalitas Nasabah Bank Syariah Indonesia KCP Godean 3 dengan Kepuasan sebagai Variabel Intervening. *Transformatif*, *5*(2), 177–190. https://doi.org/10.23971/tf.v5i2.3182

[17] Pemu, N., Ahmad, A., & Tajuddin, J. (2020). Using GeoMaSchool To Link Between Creativity and Performance for Students In Higher Education. *Proceedings of the 7th Mathematics, Science, and Computer Science Education International Seminar, MSCEIS 2019*. https://doi.org/10.4108/eai.12-10-2019.2296536

[18] Prayogi, R. D. (2020). Kecakapan Abad 21: Kompetensi Digital Pendidik Masa Depan. *Manajemen Pendidikan*, *14*(2), 144–151. https://doi.org/10.23917/jmp.v14i2.9486

[19] Puspita, Y., Fitriani, Y., Astuti, S., & Novianti, S. (2020). Selamat Tinggal Revolusi Industri 4.0, Selamat Datang Revolusi Industri 5.0. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas Pgri Palembang*, 122–130. https://jurnal.univpgri-palembang.ac.id/index.php/Prosidingpps/article/view/3794/3565

[20] Rahmawati, C., Fitriani, D., Haira, F., & Panorama, M. (2022). Pengaruh Kualitas Layanan Dan Kinerja Karyawan Terhadap Kepuasan, Kepercayaan, Dan Loyalitas Nasabah (Studi Kasus Bank Muamalat Kantor Cabang Palembang). *SIBATIK JOURNAL: Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan*, *1*(7), 1073–1088. https://doi.org/10.54443/sibatik.v1i7.123

[21] Riyadin. (2019). Pengaruh Kualitas Pelayanan Terhadap Kepuasan Masyarakat Keluarga Berencana di Kecamatan Pekalongan Kabupaten Lampung (Studi Kasus Pada Desa Pekalongan). *Jurnal Simplex*, *2*(1), 41–50.

[22] Rohimah, S. M., Putri, S. A., Nurdiansah, Y., & Supriyadi, E. (2024). Technology Exploration of Augmented Reality Mathcitymap To Increase Mathematical Proficiency. *Journal of Engineering Science and Technology*, *19*(5), 1990–2002.

[23] Sari, D. M., Pratiwi, N. M. I., & Maduwinarti, A. (2023). Pengaruh Content Marketing Dan Online Customer Review Terhadap Keputusan Pembelian Produk Kecantikan Pada Followers Akun Instagram @Sociolla. *Sosialita*, *2*(2), 1072–1080.

[24] Sasikirana, V., & Herlambang, Y. T. (2020). Urgensi Merdeka Belajar di Era Revolusi Industri 4.0 dan Tantangan Society 5.0. *E-Tech*, *08*(02), 1–8.

[25] Sya'idah, E. H., & Jauhari, T. (2018). Pengaruh Marketing Mix terhadao Loyalitas Pelanggan. *EkoNika*, *3*(1), 91–102.

[26] Taufik, A. R., & Suryani, D. R. (2024). Pengaruh Penggunaan Aplikasi MathCityMap Terhadap Kemampuan Numerasi Siswa Kelas VIII SMP Yapis Merauke. *J-PiMat: Jurnal Pendidikan …*, *6*(1), 1087–1096. http://jurnal.stkippersada.ac.id/jurnal/index.php/jpimat/article/view/3355



P.ISSN: 2086 – 4981
E.ISSN: 2620 – 6390
tip.ppj.unp.ac.id