Abstract- Learning about fruit crops can be done by utilizing the gaming media. The purpose of this research is to design a game with a concept of horticulture including planting, caring for, and maintaining fruit trees. This game is packaged in an attractive appearance and resembling the state of the garden. The game was tested by 43 hortimart visitors the result shows that the game is easy and fun to play so that users will continue to use it but it isn't influence by age, gender, and usefulness of the game.

Keywords- Horticulture game, easy to use, fun, usefulness.

I. INTRODUCTION
Agriculture in the broad sense (Agriculture) is defined as land management activities. This management is intended for the benefit of plant and animal life, while the soil is used as a container or place the management activities, which are all for human survival [1]. One Indonesian agricultural commodities is growing rapidly Horticulture (fruit trees). Fruit plants are a group of horticultural plant species other than the vegetable plant, medicinal plant materials and plantations of the whole or part of the fruit can be consumed in a fresh state and after being processed [2]. Horticultural commodities classified as a commercial commodity with high economic value (high value commodity), so it must be produced efficiently in order to compete in the market and from aspects of production, the potential for development of horticultural commodities can be improved in terms of aspects of land availability and opportunities for technology adoption [3].

Based on data from the SPH 2014, the total production of fruit crops in Indonesia amounted to 19,805,997 tons, an increase of 8.30 percent compared to the year 2013, which amounted to 18,288,279 tons [4]. From these data indicate that the development of the agricultural sector, especially in commodity Horticulture (fruit trees) and also increased public interest in the fruit crop increased. However, knowledge about the solution of problems in horticulture is still very little a lot of people do not understand. While agricultural education has a rich heritage to develop the student's personal skills and provide job skills needed in agriculture [5]. Learning and agriculture can be integrated into the classroom. The teachers believe that agriculture provides closeness, connectedness, and the authenticity of the content area to teach them to their students [6].

Just as experienced by Hortimart Agro Center, the high consumer interest in horticulture (fruit trees) but still little knowledge of consumers on fruit crops. Though hortimart sell seeds - seeds of quality but because of the lack of consumer knowledge about planting, care and maintenance of the plants make seeds - the seeds can not grow well and dies. According to the Manager of the division Agrosupply in Hortimart Center problem Agro-issue for fruit trees is often the case in Hortimart Agro Center among other things: plant diseases, Selection of fertilizers, watering, how to breed, farming techniques.

Further education and training is a very important factor for the agricultural sector. Rapid technological advances have led to the implementation of Internet applications in learning, technological advances and growing current information [7]. one of the effects of
of journals, books, research reports that support the research.

B. Research methods

The research method be decisive for determining the data collection techniques and measures research. The research method is the procedure and steps in conducting research. The study was preceded by interviews to directors and employees hortimart agro center to obtain the data required for the design of the game. After the game is finished designed Dr.plant need to do due diligence by testing cobakan to the visitors as well as distributing questionnaires to them. Questionnaire results were statistically tested to obtain the results of the feasibility Dr.plant game.

C. Development of the game

Game Development Dr.plant starts with a needs analysis in getting the interview and observation in hortimart. Then proceed with the design concept of the game from the results of a needs analysis. The next process is the process of game design using the program adobe illustrator cs 6. Once the design is complete then proceed with the making of the game with a program construct 2. Next, continue the process of testing if found a bug / error then the game will be improved and will perform testing process again. Game Development Method can be seen at Figure 1.

D. Game Testing
Testing Dr.plant game begins by designing a post-test questionnaire to test the game to the respondent, then distributing questionnaires to the respondents by testing Dr.plant game. After the results of the questionnaire obtained then the data is processed by Microsoft Excel program for mengelompakan berdsarkan variables. The processed data then tested using IBM SPSS Statistics 22 program, with 3 tests namely validity, reliability, and correlation to test the feasibility of a game. Method of Testing Game can be seen at Figure 2.

![Testing Dr.plant game](image)

**III. RESULTS AND DISCUSSION**

**A. Design of Game**

After observing the data from surveys and interviews in Hortimart Agro Center then designed based mobile game android 2 dimensions Dr.plant game. Dr.plant game arranged with gameplay and gameplay design flowchart form to facilitate the process of making games. This game has two genres namely Arcade which uses the concept highscore or collect the highest points without restriction and Simulation with the concept of completing a challenge with limited time, the game begins with the loading screen and then, into the main yard Dr.plant game. Dr.plant game on the main page there are some games that play button menus, catalogs, credit and exit (X). When the player presses play then it will go to a category page, there are several games that can be played, namely Tap Plants which include a game about taking care of the interest by pulling weeds so that flowers can grow well, Tap Hama containing permaian about caring for fruit crops in a way eradicate pests (ants, fruit flies, ladybugs) that attacks fruit crops. Planting simulations which include a game about planting fruit trees properly so that plants can grow well. When the player presses the credit will display credit page that contains information about the game maker. When the player presses the catalog will open the catalog page that contains multiple menus that Fruit which contains a variety of fruit crops in Hortimart with information about fruit crops, the price of the plant, and the plant's benefits. Fruit Crops medicine that contains information about the drug to eradicate pests of plants and to fertilize the plants with information, how to use, and price. Fruit Plant Breeding containing about how to breed good fruit crops. And when the player presses out (X) then the player will be out of the game.

**B. Gameplay**

Dr.plant is a learning game about fruit crops in hortimart and applied in the android platform. Game Dr.plant created with the aim to introduce and provide information on fruit crops in hortimart with attractive graphical use for learning to use the game more interesting when played. In the game there are 3 types of games Dr.plant that is plants Tap, Tap pests, Simulation plant and existing plant catalogs are 3 categories of fruit trees, medicinal plant fruit and plant propagation fruit with attractive appearance. Game Dr.plant made with gameplay that is easy and with an attractive appearance and resembles the original state when the garden to be played by visitors.
Display Menu Game can be seen at Figure 3.

As for the play menu, there are 3 different games that plant tap, tap pests, plant simulation that is packaged in a game arcade and simulation game. The gameplay in the game Dr.plant can be seen at Figure 4.

As for the catalog menu, there are three different categories namely fruit trees, medicinal fruit plants, and the development of fruit crops. Image catalog menu in the game Dr.plant can be seen at Figure 5.

C. Testing Game

The perform of Dr.plant game was tested by hortimart agro center visitors to get the response after they played the game. This research used hypothesis to continued the test instrument, The hypothesis were:

H1: Usefulness (M) Dr.plant game has a strong influence on the intention (T).
H2: Easy (U) Dr.plant game has a strong influence on the intention (T).
H3: Pleasure (S) Dr.plant game has a strong influence on the intention (T).

D. Validity of Variables Questionnaire

This study uses four research variables are Usability (M), Easy (U), Fun (S), intention (T) to play the Game Dr.plant. All variables need to be tested for validity studies to gauge whether the questions on the questionnaire were able to represent each variable in revealing the attitudes of respondents. To test the validity of each variable then conducted two tests is test by comparing with r table and Principal Component Factor Analysis. Testing by comparing r tables by comparing the calculation results "Corrected Item-Total Correlation" with the value contained in the r-table (at the price of n - 2) and because of the number of questionnaires is 43 -2 hence the
minimum value of r table is 0.308 (n-2 = 41), as in table 1.

### Table 1. Value - The value of r Product Moment

| M  | Total Significans | N % | 1 % |
|----|-------------------|-----|-----|
| 3  | 0.907             | 0.900 | 38  | 0.320 | 0.413 |
| 4  | 0.905             | 0.900 | 39  | 0.316 | 0.408 |
| 5  | 0.878             | 0.899 | 40  | 0.304 | 0.393 |
| 6  | 0.871             | 0.897 | 41  | 0.308 | 0.368 |
| 7  | 0.704             | 0.724 | 42  | 0.304 | 0.393 |
| 8  | 0.707             | 0.724 | 42  | 0.301 | 0.369 |
| 9  | 0.668             | 0.705 | 44  | 0.297 | 0.364 |
| 10 | 0.652             | 0.705 | 45  | 0.294 | 0.380 |
| 11 | 0.652             | 0.725 | 46  | 0.291 | 0.376 |
| 12 | 0.626             | 0.706 | 47  | 0.288 | 0.372 |
| 13 | 0.553             | 0.684 | 48  | 0.284 | 0.368 |
| 14 | 0.532             | 0.691 | 49  | 0.291 | 0.364 |
| 15 | 0.514             | 0.641 | 50  | 0.279 | 0.361 |
| 16 | 0.497             | 0.623 | 51  | 0.266 | 0.345 |
| 17 | 0.492             | 0.609 | 52  | 0.254 | 0.332 |
| 18 | 0.490             | 0.599 | 53  | 0.244 | 0.317 |
| 19 | 0.426             | 0.575 | 55  | 0.233 | 0.305 |
| 20 | 0.444             | 0.561 | 57  | 0.227 | 0.296 |
| 21 | 0.433             | 0.549 | 58  | 0.220 | 0.286 |
| 22 | 0.423             | 0.537 | 59  | 0.213 | 0.278 |
| 23 | 0.413             | 0.526 | 60  | 0.207 | 0.270 |
| 24 | 0.404             | 0.515 | 55  | 0.202 | 0.263 |
| 25 | 0.396             | 0.505 | 60  | 0.195 | 0.256 |
| 26 | 0.388             | 0.496 | 62  | 0.187 | 0.230 |
| 27 | 0.381             | 0.487 | 65  | 0.192 | 0.210 |
| 28 | 0.375             | 0.478 | 68  | 0.188 | 0.194 |
| 29 | 0.367             | 0.470 | 72  | 0.181 | 0.181 |
| 30 | 0.361             | 0.465 | 75  | 0.183 | 0.184 |
| 31 | 0.355             | 0.456 | 78  | 0.128 | 0.188 |
| 32 | 0.349             | 0.449 | 80  | 0.088 | 0.115 |
| 33 | 0.344             | 0.442 | 82  | 0.088 | 0.105 |
| 34 | 0.339             | 0.436 | 85  | 0.074 | 0.097 |
| 35 | 0.334             | 0.430 | 88  | 0.070 | 0.091 |
| 36 | 0.329             | 0.424 | 90  | 0.068 | 0.066 |
| 37 | 0.325             | 0.418 | 100 | 0.062 | 0.081 |

By testing using variable r r tables with a minimum of 0.308 table as shown in Table 4.2. From Table 2 looks M1 and S3 is not valid because the value of the variable is less than 0.308, while for the variable M2, M3, U1, U2, U3, S1, S2, T1, T2, T3 declared invalid because of the variable value of more than 0.308. Then for further testing by the Principal Component Analysis Factor M1 and S3 are not included.

### Table 2. Test Result Validity product moment r table method

| Corrected Item-Total Correlation | r table | Information |
|----------------------------------|---------|-------------|
| M1                               | 0.266   | 0.308       | Invalid |
| M2                               | 0.310   | 0.308       | valid   |
| M3                               | 0.339   | 0.308       | valid   |
| U1                               | 0.550   | 0.308       | valid   |
| U2                               | 0.681   | 0.308       | valid   |
| U3                               | 0.462   | 0.308       | valid   |
| S1                               | 0.318   | 0.308       | valid   |
| S2                               | 0.472   | 0.308       | valid   |
| S3                               | 0.261   | 0.308       | Invalid |
| T1                               | 0.442   | 0.308       | valid   |
| T2                               | 0.487   | 0.308       | valid   |
| T3                               | 0.487   | 0.308       | valid   |

After the test r table, then perform the testing process Principal Component Analysis and variable factors M1, S3 is not included in the testing to get appropriate results. From Table 3 shows that the outcome was appropriate and expected all the variables to be held the same position. Testing with this technique to ensure that all the indicators in each variable is convergent.

### Table 3. Validity Testing Results Factor method of Principal Component Analysis

| Component | 1 | 2 | 3 |
|-----------|---|---|---|
| M2        | 107 | 0.622 | .843 |
| M3        | 0.671 | 319 | 741 |
| U1        | 0.400 | 804 | .304 |
| U2        | 161 | 750 | .490 |
| U3        | 128 | 764 | .017 |
| S1        | 323 | 437 | .179 |
| S2        | 700 | 416 | .265 |
| T1        | 796 | 011 | .275 |
| T2        | 674 | 402 | .125 |
| T3        | 878 | 013 | .113 |

Thus indicator declared valid and can be used for the next test is an indicator of M2, M3, U1, U2, U3, S1, S2, T1, T2, T3.

### E. Variable reliability Questionnaire

Cronbach’s Alpha coefficient used for testing the reliability (Confidence) questionnaire. Reliability of the test results are listed in Table 4.4 in the category of the variable M questionable, Variable U in the category of Good, the variable S in the category of Poor, and for variable T in the category Acceptable. This calculation in accordance with the Internal Consistency Cronbach alpha in Table 4 and Table 5.

### Table 4. Cronbach’s Alpha coefficient for each variable research

| variables | Coefficient Cronbach’s Alpha | result |
|-----------|------------------------------|--------|
| Usefulness (M) | .613 | questionable |
### Table 5. reliability ratings

| Cronbach’s alpha | Internal consistency |
|------------------|----------------------|
| ≥ 0.9            | Excellent            |
| 0.9 > α ≥ 0.8    | Good                 |
| 0.8 > α ≥ 0.7    | Acceptable           |
| 0.7 > α ≥ 0.5    | Questionable         |
| 0.6 > α ≥ 0.5    | Poor                 |
| 0.5 > α          | Unacceptable         |

### Table 6. Correlation between variables

|      | A  | G  | K  | MM | SU | SS | ST |
|------|----|----|----|----|----|----|----|
| A    | 1  | .030 |    |    |    |    |    |
| G    | .030 | 1  | .403 | .347 |    |    |    |
| K    | .089 |    | 1  | .288 | .240 | .108 | .059 |
| MM   | .008 | .347 | .288 | 1  | .387 |    |    |
| SU   | .114 | .227 | .240 | .387 | 1  | .359 | .327 |
| SS   | .027 | .007 | .108 | .026 | .359 | 1  | .532 |

### IV. CONCLUSIONS

Dr. plant game is an horticulture game about fruit plants. Dr. plant game created with the concept of learn and play so that visitors can know about different kinds of fruit trees. Dr. plant game has some graphical look and approach the game with the original situation in hortimart. From results of tests performed, it was concluded that Dr. plant game is a game that is easy to play and fun for visitors hortimart. This is evidenced by the results Dr. plant game testing to 43 respondents visitors hortimart, Dr. plant game easy and fun when played so that users will continue to use gaming Dr. plant and is not affected by the perception of age, sex, and perceptions of the usefulness of the game.

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