Analyzing the online assessment using the expert system in fashion making practices of fashion design students in Universitas Negeri Malang

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Abstract. Online assessment using the expert system in fashion making practice was a new assessment as a result of developmental research. Online assessment using the expert system was made to avoid subjective assessment in evaluating the practice results. During the evaluation, there was a fitting process where students’ posture and face could give individual influences. The practice results from slim and pretty students would provide better effects than students who were fat and less beautiful, even using the practice assessment indicators. The physical appearance of the participants or models such as body shape, face, and others would psychologically affect the lecturers’ subjectivity during evaluation. Conducting practice evaluations using the expert system allowed students to report the practice results by answering online questions related to the fashion making results. Online assessment using the expert system facilitated the students to upload their practice results progress complete with answers following the issue in the online assessment software. Online evaluation with the expert system also assisted lecturers in monitoring the practice progress online that they could access everywhere and anywhere. This research aimed to analyze the online assessment of women fashion making practice using the expert system, to find the ease of use from the online system software, assessment content suitability, and assessment objectivity. For the methodology, this research used a quantitative descriptive method in a population of 28 Fashion Education students’ class of 2018. The sampling technique in this research was total sampling. This research used the close questionnaire as the research instrument and analyzed the data using the percentage technique. The results showed that first, software easiness such as followings instruction, operational, filling and uploading the progress, indicated that 25 of 28 respondents, or 89.28%, were in favour of the ‘easy’ category. Second, assessment content analysis, such as assessment indicator, content from each index, and assessment aspect, demonstrated that 26 of 28 respondents or 92.85% was in favour of the ‘relevant’ category. And third, the assessment objectivity such as definite measuring instruments and objective assessment presented 27 of 28 respondents in support of the ‘objective’ category. The conclusion of this research using the expert system was overall in the excellent grade. This report was accurate because, in direct practicum assessment, the fitting session used model, and thus the physical condition of the models who were pretty and slim often gave subjective final results.
1. Introduction
Evaluating the practice results in fashion making covers: model analysis assessment, the pattern drafting process, cutting process, sewing, and finishing process. Previous researches that were conducted to develop the assessment instruments in the practice subject according to included: (1) design analysis performance, (2) pattern making and pattern drafting performance, (3) pattern placement in the fabric and fabric cutting performances, (4) sewing/combine clothing parts performance, and (5) finishing performance [1]. However, assessment requires final fitting using the sharpness of the eyes. Although there are indicators as signs to assist in the evaluation, lecturers’ subjectivity is hard to avoid during the assessment. This occasion occurs because of fitting steps in the review. Students’ physical conditions such as body shape, skin colour, face, etc. could psychologically influence the lecturers’ subjectivity in evaluation. This matter could have negative impacts that are detrimental to the students. Fashion Design Practice evaluation using the Expert System is a development of the evaluation model designed to minimize the subjectivity during the assessment.

Generally, the Expert System is a system that adopts human knowledge into the computer so that the computer able to solve problems similar to those by experts. The expert system helps the expert in saving their expertise, and the system will consistently assist in solving a problem. A good expert system is designed to solve a particular problem by imitating the experts’ performances. The expert system combines inference rules with knowledge. The combination is stored in the computer that then used in the decision-making process to determine the evaluation results. To understand the Expert System, this research used the Bayes theorem. Bayes theorem has several advantages, such as easy to understand, simple coding, and faster in the calculation [2].

The advances of knowledge and technology, particularly in information technology of life, cannot be separated from computerization, including the health field. IT development, especially in artificial intelligence, produced the expert system software. Generally, the Expert System is a system that adopts human knowledge into the computer so that the computer able to solve problems similar to those by experts. The expert system helps the expert in saving their expertise, and the system will consistently assist in solving a problem. The expert system is often used in health areas by diagnosing symptoms of illness followed by the solution. In this research, researchers tried to adopt the expert system designed as a software to evaluate the practice results in women’s fashion making. This research occurred because in assessing the fashion making practice, even with assessment indicators, subjectivity level is still high, particularly during the fitting assessment. Students physically have a high influence on the assessors during the fitting. Therefore, the development of a practice evaluation model was required. The assessment indicator was changed into fault diagnosis in practice results.

In contrast, the solution in the health area was turned into scores follower by fault diagnose levels of a product in practice [3]. This application aimed to apply and develop the knowledge to detect illnesses in dumbo catfishes effectively and efficiently. The system development used the extreme programming (XP) method, consisted of 1) planning, 2) designing, 3) coding, and 4) testing. Features in the Catfish Expert System Application were: diagnose, symptoms, illness, cultivation method, and about [3].

This application aimed to implement a user-friendly system to ease the information and solution in understanding the diagnose and treatment of sick cats. This system used the waterfall method, consisted of 1) analysis, 2) design, 3) coding, 4) testing, and 5) maintenance. Featured on this application were: a) admin: 1) login, 2) user data management, 3) symptoms management, 4) illness management, 5) consultation reports input, 6) logout; and b) user: 1) consultation, 2) illnesses list.

A short overview of the problem and literature review explained that the expert system is a system that is often used to diagnose and give solutions after diagnosis. Therefore, research designed an expert system consisted of mistakes from fashion making practice to be the indicators during practice evaluation. Fault diagnosis was started from the exact requirements such as the waistline, hip circumference, skirt length, zip/button sewing technique, waistband, pocket, and finishing technique. The diagnose results would be changed into evaluation scores. The scores were standardized and
automatically scored based on the fault diagnosis. More mistakes meant lower scores; thus, the evaluation would be objective and standardize.

The expert system had helped many researchers, for example: to quickly and correctly analyse the illness so that it saves time and cost [4]. In the expert system to diagnose the liver disease, the data in the application program could be changed or added along with new data [5]. The expert system efficiently cut the diagnose time into 9 minutes and 40 seconds from 21 minutes and 67 seconds without it [6].

Research in analyzing the online assessment using the expert system in fashion making practices of fashion design students was a new thing. Previously, the expert system was used in medical research to analyse an illness, but the researcher here used it to evaluate the practice course in fashion making. The software helped the researcher in minimizing subjectivity that might occur due to the students’ physical appearance.

The framework above can be observed in the figure below.

**Figure 1.** Analysis framework of online evaluation using the expert system.

The figure above explains that the online evaluation analysis using the expert system was started from the development research on practice evaluation model product using the expert system. The conducted analysis was validated and tested in students with fashion making practice course, although usually was used in the medical field.

2. **Method**

This research was descriptive quantitative, and it did not need a hypothesis. Descriptive quantitative research is used to illustrate, explain, or sum various conditions, situations, phenomena, or research variables there is through portrait, interview, observation, and tell through documentation [7]. The population is an important matter to limit the research object. The research population is the overall research object that can be human, animals, plants, air, every value, event, life attitude, etc. therefore, these objects could be a research data source [8].

This research’s population was a class of 2018 students from Fashion Design who were taking fashion making practice subject. The sampling in this research was a saturated sampling method where each population was chosen as the respondents or 28 students. The data collection technique in this research used a close survey. The plan of the research instrument was displayed in table 1 below.
Table 1. Research instrument plan.

| No | Variable | Sub-Variable | Indicator | Question Item |
|----|----------|--------------|-----------|--------------|
| 1  | Analyzing the online assessment using the expert system | Ease analysis of software usage from the online system | Guides can be found | 1,2,3 |
|    |  |  | Easy to operate |  |
|    |  |  | Easy to fill | 4,5 |
|    |  |  | Easy in uploading the practise progress | 6,7 |
|    | Content assessment suitability | Assessment indicator | 8,9 |
|    |  | Each assessment indicator content | 10-12 |
|    |  | Assessment aspects | 13-15 |
|    | Assessment objectivity | Definite measurement | 16-18 |
|    |  | The uploaded data can be used to give an objective assessment | 19-22 |
|    |  |  | 23-27 |

Before the above plan was used to collect the data, the survey instruments needed to be tested to know the validity and reliability of question items.

3. Research Results
Data in the analysis of online assessment using the expert system in fashion making practice consisted of:

3.1 Software Easiness
The data that was collected about the ease in using the software covered: the guides were found, easy to operate, easy to fill, and easy to upload the practice progress have four alternative answers. Each question has four alternative solutions with the score of SA (Strongly Agree) with the score of 4 points, A (Agree) with the score of 3 points, SD (Slightly Disagree) with the score of 2 points, D (Disagree) with the score of 1 point. Table 2 describes the data above.

Table 2. Data tabulation on software usage easiness using an expert system.

| Score                  | Frequency per item | Total Frequency | Percentage |
|------------------------|--------------------|-----------------|------------|
| Very easy = 4          | 25 25 25 25 25 25 25 25 25 25 25 25 | 225 | 89.28 |
| Easy = 3               | 3 2 3 2 3 3 2 3 3 3 3 3 | 24 | 09.39 |
| Slightly difficult = 2 | 0 1 0 1 0 0 1 0 0 0 | 3 | 01.33 |
| Difficult = 1          | 0 0 0 0 0 0 0 0 0 0 | 0 | 00.00 |
|                        | 28 28 28 28 28 28 28 28 28 28 | 252 | 100.00 |

The data tabulation above was then calculated to obtain the frequency distribution, as displayed in table 3 below.
Table 3. Analysis of frequency distribution of software usage easiness using an expert system.

| Interval       | Category        | f  | (%)  |
|----------------|-----------------|----|------|
| 196 – 252      | Very Easy       | 225| 89.28|
| 139 –195       | Easy            | 24 | 09.39|
| 82 –138        | Slightly Difficult | 3  | 01.33|
| 28 – 88        | Difficult       | 0  | 00.00|
| Total (total respondents x 9) | 252 | 100.00|

Figure 2 presents the graphic from table 3.

![Analysis Of Easiness Using Expert System](image)

**Figure 2.** Graphic analysis of easiness level in the assessment using the expert system.

The above figure explains that the ease of use in the expert system as the assessment tool is effortless.

3.2 Content Analysis

Table 4. Data tabulation of assessment content analysis using the expert system.

| Score                  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Total frequency | Percentage |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|------------|
| Strongly Agree = 4     | 26  | 26  | 26  | 26  | 26  | 26  | 26  | 26  | 26  | 234            | 92.85      |
| Agree = 3              | 2   | 2   | 2   | 2   | 2   | 2   | 0   | 0   | 0   | 14             | 05.56      |
| Slightly Disagree = 2  | 0   | 0   | 0   | 0   | 0   | 2   | 2   | 0   | 0   | 4              | 01.59      |
| Disagree = 1           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0              | 00.00      |
| Total                  | 28  | 28  | 28  | 28  | 28  | 28  | 28  | 28  | 28  | 252            | 100.00     |

The data tabulation above was then calculated to obtain the frequency distribution, as displayed in table 5 below.
Table 5. Analysis of the frequency distribution of content assessment using the expert system.

| Interval  | Category    | f    | (%)  |
|-----------|-------------|------|------|
| 196 – 252 | Very Easy   | 234  | 92.85|
| 139 – 195 | Easy        | 14   | 05.56|
| 82 – 138  | Slightly Difficult | 4 | 01.59|
| 28 – 88   | Difficult   | 0    | 00.00|
| Total (total respondents x 9) | 190 | 252 |      |

Figure 3 below explains the table above in a graphic.

![Analysis Of content assessment using the expert system](image)

**Figure 3.** Graphic analysis of assessment content using the expert system.

The above figure presents that the suitability analysis between the assessment content with the expert system shows very suitable.

3.3 Objectivity

Table 6. Data tabulation of objectivity in using the expert system assessment.

| Score                        | Frequency per item | Percentage |
|------------------------------|--------------------|------------|
| Strongly Agree = 4           | 27 27 27 27 27 27 27 27 | 243        | 96.42     |
| Agree = 3                    | 1 1 1 1 1 1 1 1 | 9          | 3.58      |
| Slightly Disagree = 2        | 0 0 0 0 0 0 0 0 0 | 0          | 0         |
| Disagree = 1                 | 0 0 0 0 0 0 0 0 0 | 0          | 0         |
|                              | 28 28 28 28 28 28 28 28 28 | 252 | 100       |

The data tabulation above was then calculated to obtain the frequency distribution, as displayed in table 7 below.
Table 7. Analysis of frequency distribution of objectivity in using the expert system software.

| Interval  | Category       | f  | (%)  |
|-----------|----------------|----|------|
| 196 – 252 | Very Easy      | 243| 96.42|
| 139 – 195 | Easy           | 9  | 3.58 |
| 82 – 138  | Slightly Difficult | 0 | 0    |
| 28 – 88   | Difficult      | 0  | 0    |
| **Total** | **(total respondents x 9)** | 190| 252  |

Figure 4 below displays the above data.

![Analysis of Objectivity in using the expert system](image)

Figure 4. Graphic analysis of objectivity in using the expert system assessment.

Figure 4 explains that the assessment analysis using the expert system resulted in an objective result with the value of 96.42%.

4. Discussion and Summary
This assessment analysis research using the expert system had three sub-variables: usage easiness using the expert system assessment, practice assessment content using the expert system, and assessment objectivity of online evaluation using the expert system. There were 27 total questions, with 28 student respondents. The results can be described as the analysis showed that using the expert system was accessible with 89.28% or 25 out of 28 respondents agreed. This is following the opinion of B J Fogg who has explored online credibility through his studies, it's online information [9], besides the results of other studies show that the influence of perceptions of users of information technology, convenience, risk, and service features provide reliable results on interest[10]; content analysis presented that 26 out of 28 respondents or 92.85% stated that the content assessment was complete; objectivity assessment showed that using the expert system, 96.42% or 27 out of 28 respondents reported very objective. This is consistent with the results of research which state that hypertext facilities owned by the internet/intranet are equipped with a dynamic database system that is tried to be used as an online evaluation support facility. Online evaluation is expected to be able to provide evaluation results precisely and quickly [11]

It can be concluded that this research produced the assessment using the expert system that was overall in the excellent category. This report was accurate because, in direct practicum assessment, the
fitting session used model, and thus the physical condition of the models who were pretty and slim often gave subjective final results.

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