DEVELOPING INSTRUMENTS FOR ANALYZING ONLINE LEARNING DURING COVID-19 PANDEMIC ERA IN HIGHER EDUCATION

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ABSTRACT

*Objectives: In higher education, developing a testing and instrumentation platform for online learning is significant during the Covid-19 era. **Methodology:** Reserchers make use of the Colton and Covert model. Once the instrument had been developed, it was proved valid through two tests: Second, they asked experts in the field to provide information about the instrument. Third, a three-round Delphi study was done to collect target participants' opinions and feedback on the measuring device. **Result:** Finally, the developed questionnaire and online learning software were compared to see if they could reproduce each other's functions. Four purposes of the existing tools included: to create online learning courses; to assess the capabilities of institutions; to evaluate their finished products and learning materials. **Conclusion:** The instruments used in online learning are more extensive in the following six areas: Validation, adaptability, productivity, simplicity, trust, value, form, behavior, dynamism, robustness, and clarity.*

Keywords: Curriculum, Instrument, Online Learning, Pandemic Era.

INTRODUCTION

The COVID-19 pandemi has shifted the school learning outcomes to nearly 1.6 billion students in 190 countries. Reductions in learning spaces have impacted around the world up to 95% of the population and in the developing countries up to 99% of the population (States, 2020).Corona Virus Disease or Covid19 is the wide problems, not only in Indonesia but global. Especially in education section. It is be complicated cases. Like or not, the system must change, all activities start from home. It is line with the leaflet of Education number 15 year 2020 stated the guidance for school from home'Student learning outcomes during BDR are given qualitative and useful feedback from the teacher without being required to give quantitative scores/values" (Surat Edaran, 2020). It means that the students' the learning outcomes of the students during School from Home are given qualitative and useful feedback from the teacher without being required to give quantitative scores. It supported by (Makarim, 2020) explained that school must conduct online class and the students learn from their home. Automatically, teacher needs the new approaches, methods, techniques, strategies and ways in the learning process. They also need the instruments to assess the students during online class. The usual scoring is not relevant in this situation.

Assessment is an important component of teaching and learning processes. This can only be done by the teacher or lecturer creating a well-functioning means of assessment for evaluating student progress in the instruments required in the learning process. The education system is affected by services that are located on the various components found online. That tool has been used in the prior studies regarding the collection of online service data is now employed for analysis (Sorooshian, Salimi, & Asfaranjan, 2013). Studies often include an interactive, visual and tangible content as well as well as experiential application of information. Video with multimedia software used to improve, expands, and enriches the content. Better audio equipment and better connections result in a much better connection with the player, enhancing the user's overall experience. Instant messaging on the forum adds to students' ability to build their social networks, connecting them with other learners. The correlation between each of several parameters forms the individual's experience on the course.

The development of IT solutions in relation to online education has also contributed to notable advancements in the experience of online learning. In contemporary education, the online and in addition to traditional instructional tools such as textbooks, educational software, e-learning, and books are included as "the fourth generation of both electronic learning environments" (Salmon, 2013) (Cobroft, Towers, Smith, & Bruns, 2006). In addition, the online learning phenomenon has created a demand for a scale that measures a student's capacity for achievement. One recent study has found that international considerations also need to be considered when setting up an online learning environment is vital. (Jayatilleke & Gunawardena, 2016). Peer interaction is a problem that happens when people are learning online because there is no interaction in cyberspace (Phirangee & Hewitt, 2016). There has been increasing discussion about students being cut off from each other due to the rising popularity of online learning. However, in some ways, it could be argued that mastery of the Internet makes you isolated if you don't take the time to work hard. The threat of an unproductive results, erroneous expectations, and actual non-use could lead to loss of motivation. Providing an online learning experience that's not aligned with students' natural interests and %s and, and improvements to the product's overall user experience.

METHOD

The Colton and Covert framework was used as an instrument to achieve the objective of this research. This research was carried out in two steps based on Colton and Covert's model. After an examination of the literature, the scope of the project was established. Also, the test was found to be the best instrument for use. Essential elements for online learning were identified through a literature and a critical-pedagogical analysis of available resources. after that, a complete architecture was designed which incorporated all important elements of quality It is difficult to gauge the exact impact that the internet has on student achievement because the conditions under which students receive online learning were not previously duplicated in any face-to-to-face classrooms (Colton & Covert, 2007). To confirm the instrument was able to provide credible and accurate information, it was tested for face validity and content validity. The validity of the developed instrument was assessed in two stages. First, the researchers interviewed the relevant experts to gather their opinions and comments about the instrument. These experts include educators in Stain Mandailing Natal, online education experts, educational informatics experts, lecturers who have online learning experience and English language experts. The researchers modified the instrument according to their suggestions. Then a three-round Delphi study was conducted to gain opinions and comments about the measurement instrument from target potential learners.

RESULT AND DISCUSSION

Result

An Instrument for Evaluating the Quality of online learning

Through analysis that above and further in depth, it identified thirty things to look for, it found [there were] thirty things to measure. it was developed based on these key concepts and is used by learning managers who follow the fundamental rules of online learning (see Figure 1.1).

FIGURE 1
THE FRAMEWORK OF ONLINE LEARNING QUALITY

There were six pieces to the system: the learner, instructional method, content, technology, delivery modes, instructional methodology, and methodology of teaching. The design system is proposed to include the thirty sub-dimensional elements (as well as six of the secondary ones) see Table 1.1. This questionnaire was developed to gather a better understanding of the strengths and weaknesses of online learning courses. See the six dimension as well as the dimensions of the different question types for each question below.

Table 1 THE SIX DIMENSION OF QUALITY THE ONLINE LEARNING	
Dimension	**Elements**
Learner	Other main constraint: computer ability, e-learning ability, inexperience with, the necessity for study, written communication, time required, self-paced study, needed training, written material, training needs, physical equipment and internet access, privacy, required
Teacher	Competence, optimal profile, compatible framework, eager and flexible kids.
Content	The Expand the information, accuracy, update the content, relevance, presentation, and presentation.
Delivery Mode	Methods, pedagogical theory, delivery formats, and discussion, and navigation techniques.
Service	Advising, self-service, independent online assistance, and support, and printing are just some of the capabilities we will be able to provide to customers who use our new technical-knowledge platform.
Technology	This release was required by technology as well as time zone and security

concerns.

It is important that the learners are the focal point in the online environment (Simonson & Smaldino, 2011). Nine things were found to directly affect student performance in an online classroom, literature analysis was able to uncovering nine variables that had the potential to expand in another direction. In the students' vocabulary was increased, their motivation decreased, their computer skills needed to be refined, time was not an issue because of inexperience, and their access to writing and studying was enhanced, and because of course, and for their own benefit, privacy, their content was not restricted. There is little to be gained in nursing students having online professors as support or advisers; in fact, it's not recommended that they go it alone. Most want or require some form of academic or mentoring assistance from an instructor online (Betts & Burgress, 2006). Online teachers have an entirely different role to that of assisting their students, versus those in a traditional setting. A prominent facilitator is required in an online learning training environment because people learn from each other much more easily and information isn't as central to the process as it is in a traditional classroom training (Kozlowski, 2004) (Mahoney & S, 2005); (Lim & Lee, 2008); (O'Neil, 2009). Online teachers have an entirely different role to that of assisting their students, versus those in a traditional setting. A prominent facilitator is required in an online learning training environment because people learn from each other much more easily and information isn't as central to the process as it is in a traditional classroom training.

The course materials should be sufficiently complete and current to enable students to utilize them in their daily lives (Peat & Franklin, 2002); (Green & Mitchell, 2009) and relevant to practical students' work (Dikli, 2003); (Alruwais, Wills & Wald, 2018) To put it another way, therefore, the first three sub-dimensions involved the course content's accuracy, the continuous update, and the relevance. In order to ensure students' attention, it is important to expand on the information presented. The last, as the main part of the content, the text should be attractive, interesting, accurate, and useful. Pedagogical theory, delivery method, interaction style, lecture format, and language style were all recognized as facets of the educational component of service delivery. Because it is required for online learning, service is a feature rather than a support. Online learning courses must supply four basic services: qualitative analysis, critical thinking, concept clarification, evaluation, and intellectual development. In addition to the support services already mentioned, users can request individual training on operating software, conducting self-diagnosis, printing out diagnostic information, and repair orders, and file retrieval services. the spatial analysis of literature has demonstrated that there are three distinct issues associated with technology expansion More technical specifications needed to be defined, there were some time zone issues to be resolved, and of course, and of course, security was a concern.

Instrument Validity Testing

Preventing the instrument could provide accurate and credible information to the instrument was subjected to comprehensive testing This section presents the data that was obtained during the instrument validity test. The ten interviewers are presented here according to their interview order of appearance on the interview chart, they are listed from interview number 1 to interview number 10. Then, the Delphi survey process is said to have occurred. Finally, the new questionnaire is shown to the class. To make the instrument easier to comprehend for respondents, the layout was simplified. This investigation was followed by an analysis of data obtained through the Delphi for additional to ensure the validity of the instrument. A Delphi validation procedure was subsequently employed to confirm the instrument's performance. A three-round Delphi survey was conducted with sufficient thought given to it. However, the implementation was not identical to the original conception. In the

first place, students who were already experienced in online learning were asked to take part in this research project. After being supplied with assistance from the lecturer on campus, the Stain Mandailing Natal staff and all administrative staff members supported the project participants to ensure they all qualified candidates received pamphlets. The students were given an opportunity to inform the researchers about their current positions. A total of fourteen students responded to the invitation to participate. as well as their email addresses, an email was dispatched to each of them to follow up, testing their accounts to see if they were still active. This project is only for those who choose to expand their horizons and go beyond the scope of their usual experience. As shown in the email replay, it can be inferred. The first week, the researchers had a contract in which all participants shared the information for everyone's benefit. The students believe that there is a problem with the online learning process because of recent developments has confused their expectations. Once they return to their partners, the researchers discuss it again. At this point, there was still the opportunity to make a second attempt. The only 7 students who participated before were rejected, so a new attempt was made to send the participation email to the other 9 students. In my experience, the vast majority of these students didn't offer a response even when I asked. Many people who were meant to participate in the project did not show up. It was too difficult to keep going on to the rest of the survey two rounds, and to answer the questions at that point, the respondents indicated that they were done. It worked perfectly, and the developed instrument was tested. The results of that were obtained were incorporated into the revisions to the instrument proved vital. In the end, eighty different items were produced to take into account the account the thirty key elements of online courses. Listed in Table 2 is an exhaustive list of these items.

Element	Questions
1. Motivation	1. Credit will be given to participants after the program has been completed or can be earned upon completion of the program completion. 2. To guide learners to better success and success, the content is created in order to meet their needs.
2. Computer skill	1. The course provides pre-program training that provides the necessary computer skills for the course.
3. Time issue	1. Information is provided on how long (roughly) to spend on learning. 2. Guidance is available on how to organize online time management learning.
4. Inexperience with online learning	1. Guidance is available on how to organize online time management learning. 2. Sample lessons can be found online.
5. Accessibility	1. 24 hours, 7 days a week access to the course. 2. The library is sufficiently resourced.
6. Self-pacing study	1. The course allows the student to decide how quickly to learn.
7. Written communication	1. The course offers training on written communication for students.
8. Computer equipment and Internet connection	1. Courses can be accessed from any computer connected to the Internet.
9. Privacy issues	1. Data protection policy is clearly explained.
10. Qualification	1. The course provides teachers with background information. 2. The teachers propose new resources for learning. 3. The teacher encourages online discussion participation.
11. Accessibility	1. With questions, it is always easy to contact a teacher via email or
12. Responsiveness	1. Feedback mechanisms are in place to assist students in evaluating their performance.
13. Student per teacher	1. An evaluation form is provided to assist the student in reviewing the course
14. Accuracy	1. The content is error-free? 2. All of the content is fully cited.

15. Update	1. The contents of the latest update are regularly updated.
16. Relevancy	1. The contents are relevant to day care.
17. Content presentation	1. All the videos are relevant and helpful. 2. Clinicians to film themselves in the process of providing patient care. 3. Each part of the content is presented in an easily digestible module. 4. This course provides a strong contrast between the readings and relevant background information.
18.The format of text	1. Emphasis is given to important terms or concepts in text by using font styles (e.g., bolding). 2. The writing style is fixed and consistent. 3. Preferences page.
19. Pedagogical theory	1. The subject matter is structured to appeal to students at various stages of knowledge. 2. Aims and objective are clearly specified. 3. The links are provided on the course. 4. The quizzes are automatically assessed. 5. Active and hands-on learning approaches.
20. Delivery format	1. This content accommodates different learning styles: text for visual learners, graphics for auditory learners, and audiovisual learners. 2. A course manual is required. 3. An illustration accompanies the text in aiding comprehension. 4. Course materials include an extra materials such as the lecture notes, required readings, recommended readings, and outside resources. 5. A free DVD is included.
21. Interaction	1. To guarantee rapid and consistent peer-to-to-peer feedback, along with material support, and technical aid. 2. The assessment tasks encourage students to cooperate.
22. Discussion	1. Synchronous and asynchronous discussion is covered. 2. These rules, such as forbidding discussion unrelated to the course, are enforced. 3. Teacher-directed conversation. 4. An exercise.
23. Navigation	1. As a clear as a guide. 2. Each web page contains the following: descend of previous pages; head to the index, or table of contents link to the FAQ systems. 3. All of the pages have titles which tell you what the page is about. 4. There is a site map or index on the front page linked to the main page. 5. The tool is a quick and simple to use to use in finding information retrieval. 6. More complex bookmarks can be stored within the course. 7. Easy to understand. 8. There is a 30% chance that for links that access documents outside the site. 9. When students are following a link, they will be informed of the presence of these elements. 10. By email, phone, alert, post, and announcements, the student is notified of changes in his/her deadline or other relevant information.
24. Technical support	1. Technical support is available for the entirety of the course. 2. Tech support can help with getting an issue fixed. 3. The ability to contact technical support by phone, e-mail, or post (mail). 4. Incredibly, exceptionally prompt.
25. Self-help service	1. Self-help is ready for use. 2. In-down-terms, which a non-technical definition of each technical term is provided. 3. As the title indicates, this training program provides answers the most frequently asked questions. 4. Helping students is always available. 5. The assistance line service is free of charge.

26. Advising and counseling service	1. An advice and advice service is available. 2. Consultants or advisers are available easily by email, telephone or by post (mail). 3. Administrative data are available. 4. There is a complaints telephone line.
27. Download and printout service	1. The following materials are available for printing: lecture notes, required lectures, recommended lectures, additional materials and other course material such as instructions or course design. 2. Students can download software they need.
28. Technology requirement	1. The limitation of Internet bandwidth. 2. The course clearly sets out the requirements for hardware, software and Internet access. 3. Students can submit email evaluation tasks to do. 4. The switching speed between web pages is fast.
29. Time zone issues	1. When the conference call is addressed to a widely distributed group of students, be aware of time zone issues, particularly when arranging the dates or times.
30. Security	1. The students will find it to be simple. 2. Students have a designated and secure (i.e., password-locked) section on the website where they can store their resources and notes.

Credible and accurate information about the instrument information has been established by engaging experts is required in order to be useful. According to their advice, the survey takers, four questions were introduced for gathering information on the respondents 'demographic details. As fifteen new statements emerged, the experts decided that these statements were crucial. Their advice was followed and the improved instrument was redesigned to fit their recommendations. There were a total of seventy-eight learning objects created for this test. Since content validity of this procedure was to be validated, this Delphi study was aborted because of lack of participation.

DISCUSSION

This study proceeded on the basis of Colton and Covert's theory of instrument construction, combined with a review of the literature and the interview methodology. Previous researchers were unable to take advantage of the tools and approaches that they had developed in order to improve a measurement instrument should be taken into consideration when devising a new measurements for the same aim. In the course of this investigation, nine dimensions of online students were discovered. E-learning issues such as motivation, lack of computer skills, self-paced study, written communication, and equipment availability were the largest barriers. These two different e-learning tools, however, managed to cover all of these qualities, at the same time: The other seven tools only covered several aspects of students; they only provided a few options for children. The Web Based Training Measures article mentions five elements: motivation, computer skill, inexperience with e-learning, and accessibility in Best Practices for the use of Electronically Offered Degree and Certificate Programs. Teachers of Creativity: These dimensions were described in a previous article. They were competence, accessibility, and adaptability. They were responsive and adaptable to student needs. Consider, for instance, quality: For instance, in this instance is measured not by how much time it takes to complete, but how much money it saves a set of seven principles for effective teaching (Kemdikbud, 2020). While there were a total of fifteen tools available, none of them covered any of these aspects. Only four of the existing e-learning resources included these four factors in their assessment of teachers' productivity. Of those who hadn't yet been covered by other e-learning tools, not necessarily those that already existed.

Within the study, five different types of characteristics about online nursing education content were discovered to be valuable. It was about: The accuracy, relevance, layout, and

presentation of text, as well as new content. The information was provided in the correct formatting in fifteen tools, followed by significance, up-to-to-dateity, and newly crafted content. By the final estimation, the established instrument accentuated the education of nurses to be up-to-to-date, comprehensible, relevant, and timely. Four aspects of service dimensions that were emphasized in the developed questionnaires for nursing education were discovered during investigation. The experienced helpdesk helps inexperienced helpdesks. Technical support is for those who can't fix things. Self-help is for those who need it. It's noteworthy, however, that three of the e-learning tools surveyed fully met all of these four requirements. An overall framework for success factors includes these three things: good practices, goals, and measurement (Tolin, 2000) (Fresen & Boyd, 2005). According to this study, seven of the existing e-learning tools have technical support, advising, coaching, and counseling as a service alone. Of the six tools, only one contained one of these four elements. This data is revealed to have been found in every seventeen of the aforementioned tools, or listed in every one of them.

Five delivery modes were specified in the developed instrument: pedagogical theory, format, interactions, discussion, and navigation were all provided in the questionnaire The final three features of technology, time zone latency, security, and time zone came out as the key dimensions that had to be discovered in the research. Not one of the existing online learning resources listed these three elements: the only tool mentioned the elements of effectiveness of effective teaching: the Distance Learning Evaluation. These two tools have included the following fifteen different approaches to projects: twelve out-of-of-the-the-the-box ideas, one outside-the-the-the-box idea, and one completely innovative approach. Furthermore, there were ten technologies which dealt with only with these three dimensions. However, there are only seventeen tools here that do not contain any of these three components. In this study, the methodology that was used to learn about online is thought to be the most effective was discussed, and that method is considered to be the most advantageous for pandemic events. They also compared the functions of the developed questionnaire and the use of the existing online tools in-class learning method. There were four functions of the existing online training tools: for institutions to develop online training courses; for designers to build web-based training curricula; for users to review existing online training curricula and training resources; and training course material; and for the purpose of both of education and training. However, there were no standardization or evaluation instruments in place to measure the quality of online learning. Furthermore, the difference between the questionnaire being developed and the quality of the online tools that is already in use. None of the currently available online learning tools met the requirements of the tested survey of all thirty survey elements. The disappointing fact is that existing online learning technologies have shown that they do not effectively meet the requirements of students as e-learners.

CONCLUSION

This article describes the intricacies and capabilties of providing technical assistance in the face of a global epidemic. Creative expression is measured by the dimension of learner, content delivery, modes, service, and technology. Validity was found during the development of the instrumentation process this was an attempt to check the face and content validity of the instrument. The developed scale was constructed by interviewing ten experts in the field who had years of experience to evaluate its face validity. Creative equivalent: Generally, the statements were rewritten in order to be more readable, according to their advice. It resulted in many repetitive words being deleted and some similar items were combined. The previous item is not only true but also misleading: not only was it correct, but it was mixed up as well. Also, all of the questions on the measurement instrument were re-worded to be statements

rather than multiple choices. In order to verify the contents of the instrument, ten experts were interviewed and asked to respond to its questions. According to their advice, the survey takers, four questions were introduced for gathering information on the respondents' demographic details. As fifteen new statements emerged, the experts decided that these statements were crucial.

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