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Technology Education with Integrated Values: From the Perspective of Risalah Nur in Building a Prosperous Society 5.0

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Abstract

This study focuses on the integration of universal values through personalized education for technology learning in a 5.0 society that is appropriate to the application of technology in daily life. This goal has always been the traditional goal of education and training for human resource development. This includes support for the STEM community in STEM-technology programs and promoting value education at all levels in academic subjects, studies, research and development of the application of real values and ethics locally and internationally. The objective of the study was to analyze, design, build, evaluate and shape the Dining on the Cloud model: an Easy-to-digest e-Module with Podcasts, Audio & Video AR Books. The UDin model or in Malay Rengkas model is used in the study of development media. This UDin model

or Rengkas model is an integrated agile version model for instructional design, development, assessment and personalized learning environment model in education. In line with the development of Malaysia towards a 5.0 society from the 4.0 industrial revolution, this study applies the latest technology in the development of learning media and further identifies the influence of access, environment, media, reflection and engagement on personalized learning. Finally, the impact of PdPn on values in self-development to build a civil society will be studied. The reliability and validity of the study instruments also have the potential to be implemented with modern statistical methods using the Rasch Model.

Keywords: Personalized Learning, Buffet on the Cloud, Podcast; Audio Books, AR Video, UDiN Model, Society 5.0.

Introduction

Society 5.0 is a concept bursts from the nation of Japan. Din (2021a) explains that Society 5.0 is a smart society that emphasizes the integration of smart technology and human. This community chronology starts from the hunter community or hunting society (Society 1.0), followed by the agricultural society or agrarian society (Society 2.0), industrial society or industrial society (Society 3.0), information society or information society (Society 4.0) and continues to Society 5.0 that created from technology-based hospitality, values and new ways of living. This society are able to analyze and synthesize information generated from the technology of the 4th revolution in various forms that surpass human capabilities that will have a major impact to industry and society. Therefore, the community needs to be prepared to face the speed and rapid change brought about by this Industrial Revolution 4.0. Previously, our focus was precisely on the technology however the success of the Industrial Revolution 4.0 and Society 5.0 must go hand in hand to achieve development that is comprehensive towards building a civil and prosperous society (Din, 2021a).

There are many verses of the Quran that confirm the innovation of science and technology has been discovered and there is still much to be explored. Said Nursi Bediuzzaman (Nursi, 2011a, 2011b, 2001) argue that the Quran is a book of guidance for the whole beings at all times. Many scientific truths found in the Quran are made known only after the discovery of modern science that confirm it. In fact, as a book of guidance, the Quran is supposed to be a guide to discovery and leading scientific discovery. Said Nursi explains that the Quran guiding the owners of reason in general (Nursi, 2011b, 2001). Nursi also explains the placement of the clue in the Quran's explanation of the various circumstances that can guide any sensible person to creates new innovations. In the wise Quran, it is also found a number of common events that are partially described but stored within are laws or principles that are universal hence form the basis for innovation which is more specific. The Quran also gives analogies to events in partial form which chronology is part of a comprehensive universal method. There are as many as 700 verses in the Quran that spoke of science while almost half of the Quran contains stories and teachings embedded with the truth of science. Therefore, science, technology education and religion must go hand in hand to develop effective and balanced modules or lessons.

The study of Arsad & Osman (2019) shows all the elements of values namely being grateful, cooperating, thinking rationally, appreciating nature and the contribution of science and technology as well as justice increased after implementing intervention either through conventional teaching as well as using the STEM Kids Tauhidik module. However there is no significant difference effect between the two approaches. This may be due to the less robust T-A-M interaction approach used and the implementation time limited to four weeks of

formal learning session in the classroom. Besides, it is most likely due to the measuring instruments used in the study were not using modern methods and second generation statistics that ensure evaluation and the measurements made are completely valid and reliable. Hence, this study will develop an instrument that can measure the usability of “Buffet on the Cloud” for technology education that is integrated with values that can aid construction of individual and civilized Society 5.0 using modern statistical methods through Rasch model and second-generation statistics for the validation of three measurement models in the Instrument The Usability of Buffet on the Cloud System with Values and Personalized Education.

Model Reka Bentuk Sejagat dan Pembangunan Tangkas (Rengkas)

This section will describe the instructional design model or ID model i.e. instructional design model used to build the “Buffet on the Cloud” e-module. This local mold instructional design model focuses on the process of designing teaching and learning focusing on the process of learning and product development or teaching and learning media either for a certain product or a combination of many products that make up one system.

Most well-known models are from abroad and on the average, all of them focus on only one out of the three focuses of the existing teaching and development design model. The first focus is on the learning process in the room degrees for example the Dick & Reiser Model (1989); Model Heinich, Molenda & Russell (1989); The ASSURE Model (1996) and the Gerlach & Ely Model (1971). The second focus is on product development or learning media such as the Kemp Model and the ADDIE Model. The third and final focus is systems such as the Development Model series (Din, 2001) ending with the Design Model and Development of Teaching & Learning System IV or better known by its acronym namely the SPPIV Design Model (Din, 2017a; 2017b). In the third ID model category is also the IDI Model (Hamreus, 1968); The IPISD model (Branson et al., 1975); Model Systems Engineering or Software Engineering Model (Pressman, 2005) and also (Dick Model & Carey, 1996). This categorization differs from one aspect to another. For example, there are educators who categorize the Dick & Carey Model (1996) as model that belongs to a system-based model but it can also actually be categorized as the first category model i.e. a classroom-based model. Product-based model involves a single product learning but it can also be categorized as a system-based model if it involves many product components. This section will continues with a description of the ID model by explaining the Rengkas model as an example.

The Definition of Instructional Design

Instructional Design is defined as a systematic process of translating basic principles of teaching and learning to plan the preparation of teaching materials and activities that can make the process and activities of acquisition knowledge and skills become more efficient, effective and engaging.

Model Reka Bentuk Sejagat Dan Pembangunan Tangkas (Rengkas)

The essence and components involved in the design and development of a media or product for teaching, training and learning whether in the classroom, lectures, training or for online individual learning needs to be understood before design and development begins. The model that explains this is the named model “Reka Bentuk Universal dan Pembangunan Tangkas (Rengkas). In English, it is known as the “Universal Design and Agile Development (UDin)” model. UDin model or Rengkas is a comprehensive model for designing, building, testing

usability, implement, evaluate usefulness and make impact modeling or the relationship of the learning process to any media, product, application or teaching system and virtual immersive learning. Conventional module development can also use this model.

Rengkas Model or UDin is built to guide novice designers and developers that use conventional and non-iterative models or continue to agile models or agile that is systematically adjustable. Rengkas Model involves stakeholder in all phases and stages of the design. All phases and stages support exploration and ideas change as long as the process stays with the learning outcomes or learning products that have been determined and mutually agreed upon. The design and development methods described in this model have been tested and modeled on more than 15 products using testing tools or measuring tools that can be trusted with good validity. This is to ensure the quality of the product is not set aside during the transformation to obtains a flexible solution.

This model uses engagement and iterative triangulation validity methods for the past 20 since 1999. Various improvements are made until saturation reached through product testing up to the final product which is called Rengkas or UDin, It was certified in 2020 and its testing continues to this day. At the design stage, five components namely (i) values, (ii) content, (iii) learning theories, (iv) pedagogy or learning method and (v) learning strategy is taken into account based on learning outcome and assessment (LOA). Learning outcome here is defined as driven development and assessment in the process of implementation teaching and learning. Rengkas model or UDin begins with the System Development Model followed by the System Design and Development Model II, III, IV (Din, 2016; Din & Kilicman 2017) and ends with Rengkas model or UDin (Din 2018; Din, 2020) as in Figure 1. The following describes the three-layer components for Rengkas Model or UDin Model.

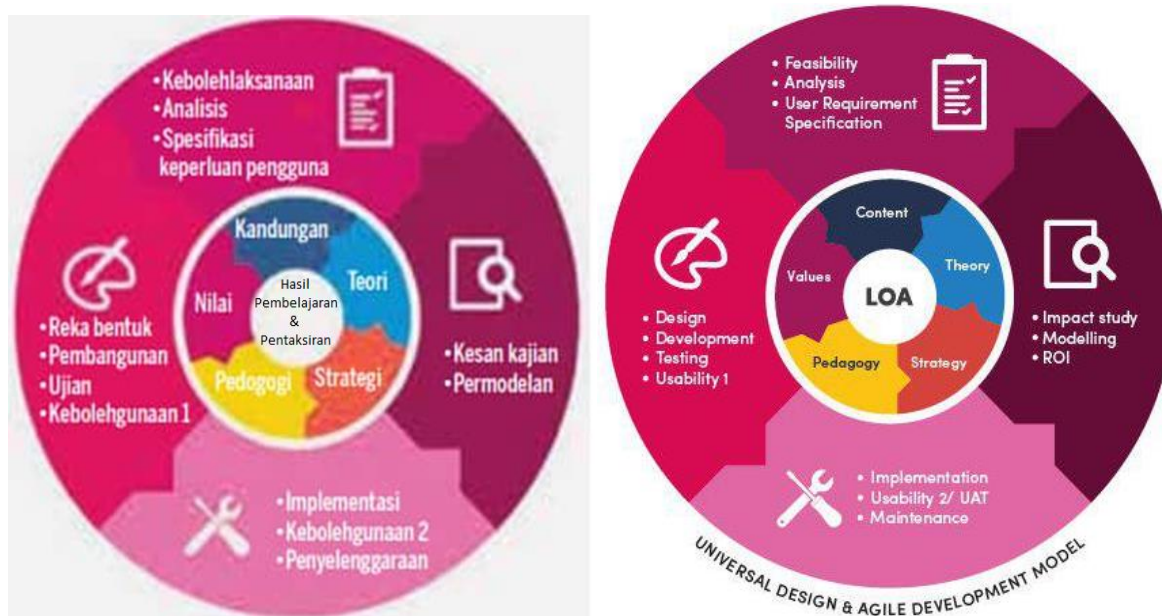


Figure 1. Model Reka Bentuk Universal dan Pembangunan Tangkas (Rengkas – left) and Model Universal Design and Agile Development (UDin – right)(Din, 2020)

The Center Point of the UDin Model

At the central point of this model are the learning outcomes component and the assessment component. The point the center is labeled as an LOA component that represents Learning Outcome & Assessment. Learning outcomes are the first component to be identified. To

achieve learning outcome, testing and measurement procedures are carried out to determine whether the objectives can be achieved. Evaluation is usually done at the end and during the process learning. The information gained from this assessment process will guide the planning activities, media usage and materials required for training as well as increasing utilization online material (Baharudin et al., 2018).

Central Circle Layer: UDin Model @ Rengkas

Outside the center point is the center circle layer of the UDin @ Rengkas model. This layer consists of instructional design model as shown in Figure 1 above. There are five components involved in the instructional design stage. First and foremost is **Content** which is the educational media to be developed. Content is delivered in a variety of technologies interface and are chosen based on learning theory prescribed or theory-based mind processes. Social learning is one example learning theory. At this stage, we also define and plan to integrate **Values** into the system or product we want to develop. Afterwards, the phase of planning activities appropriate to the chosen learning **pedagogy** and **strategy** for implementation is applied.

In the initial model, the instructional design model as shown in Figure 2 is embedded into the development phase shown in Figure 3. The original model has only 4 components compared to 5 in the advanced UDin @ Rengkas model which is perfected when **value** component is included in it (as in Figure 1).

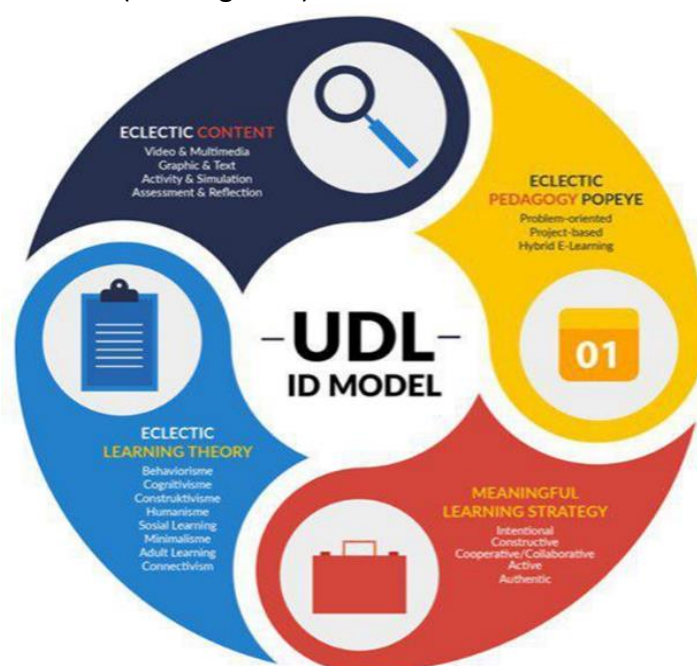


Figure 2. UDL original model embedded in Model SPP IV and UDin Model (Din, 2016; 2020)

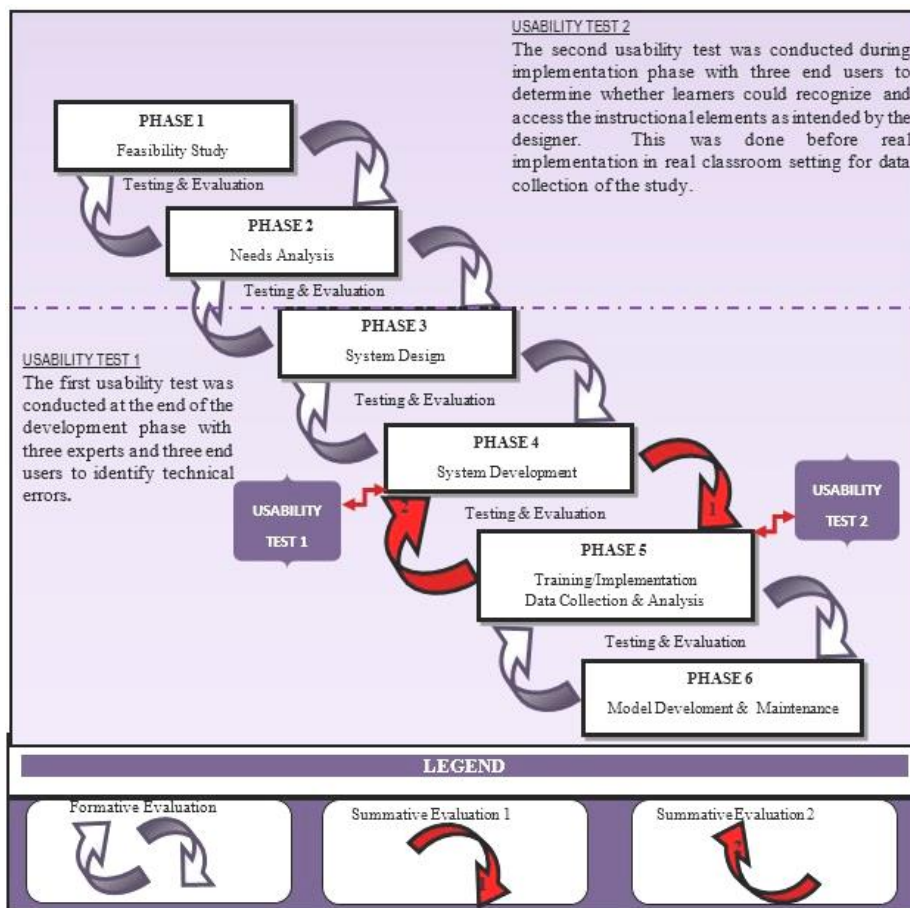


Figure 3. Instructional Design Teaching and Learning Development System Model IV.

Outer Circle Layer: UDin @ Rengkas Model

The outer spiral layer represents the phases involved with testing and validity of various educational applications, systems and products to generate the UDin transformation models. Starting with the System Development Model, the next model is the Design Model and System Development II and lastly the System Design and Development Model III (Din, 2016, 2017, 2018, 2020).

ID Model Based on Classroom, Product and System

This section describes the other well-known ID models which are mostly from abroad. On the average, these models focusing on only one of the three focuses of instructional design models and existing development. The first focus on the *learning process in the classroom* for example Dick & Reiser's model (1989) as in Figure 4. In addition there are Heinich, Molenda & Russell (1989) and the ASSURE model (1996) as in Figure 5 as well as the Gerlach & Ely model (1971) as in Figure 6.

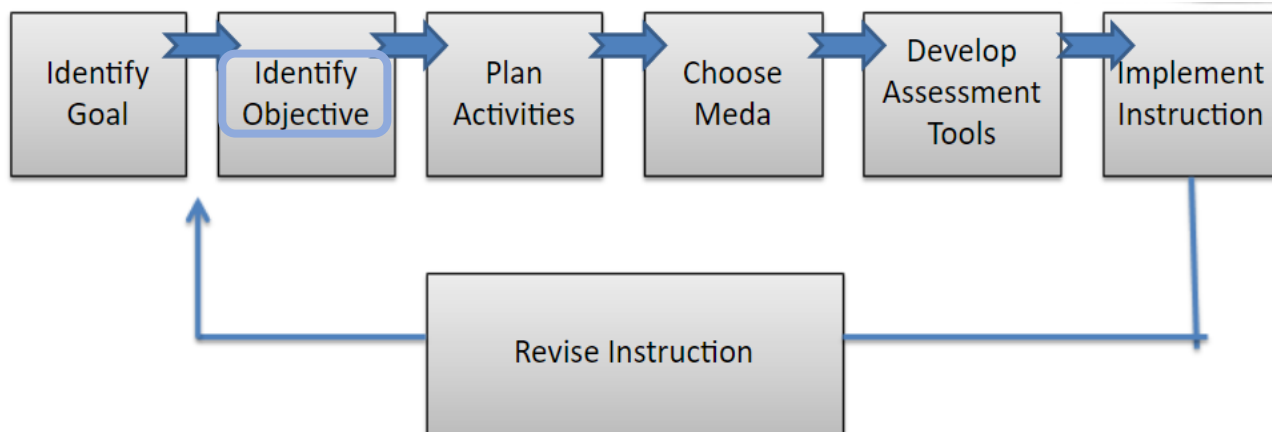


Figure 4. Dick & Reiser Model (1989)

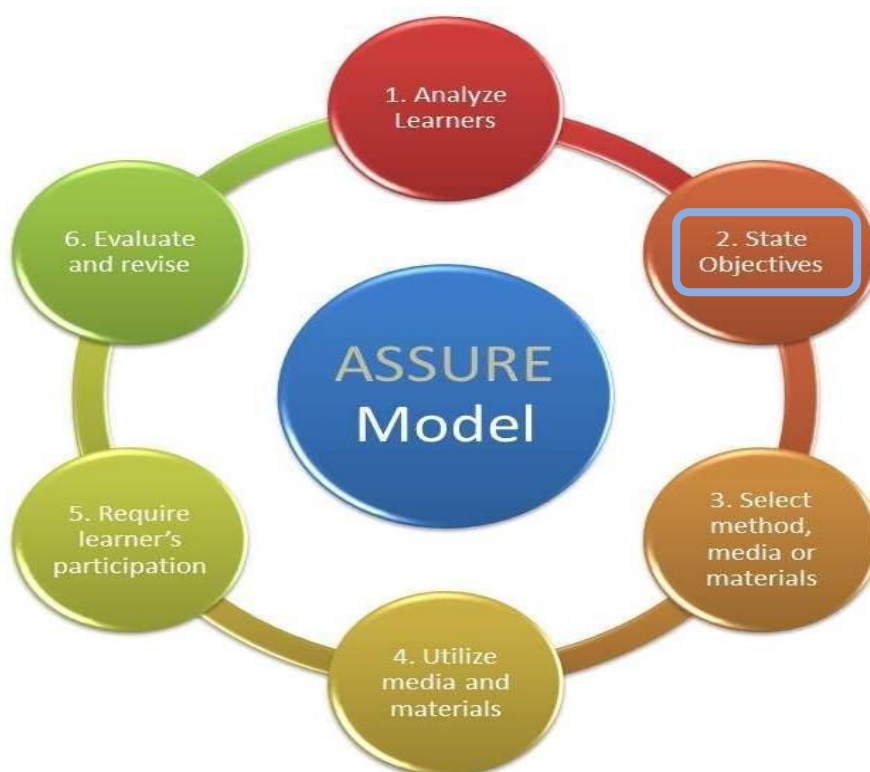


Figure 5. ASSURE Model from Heinich, Molenda & Russell (1989, 1996)

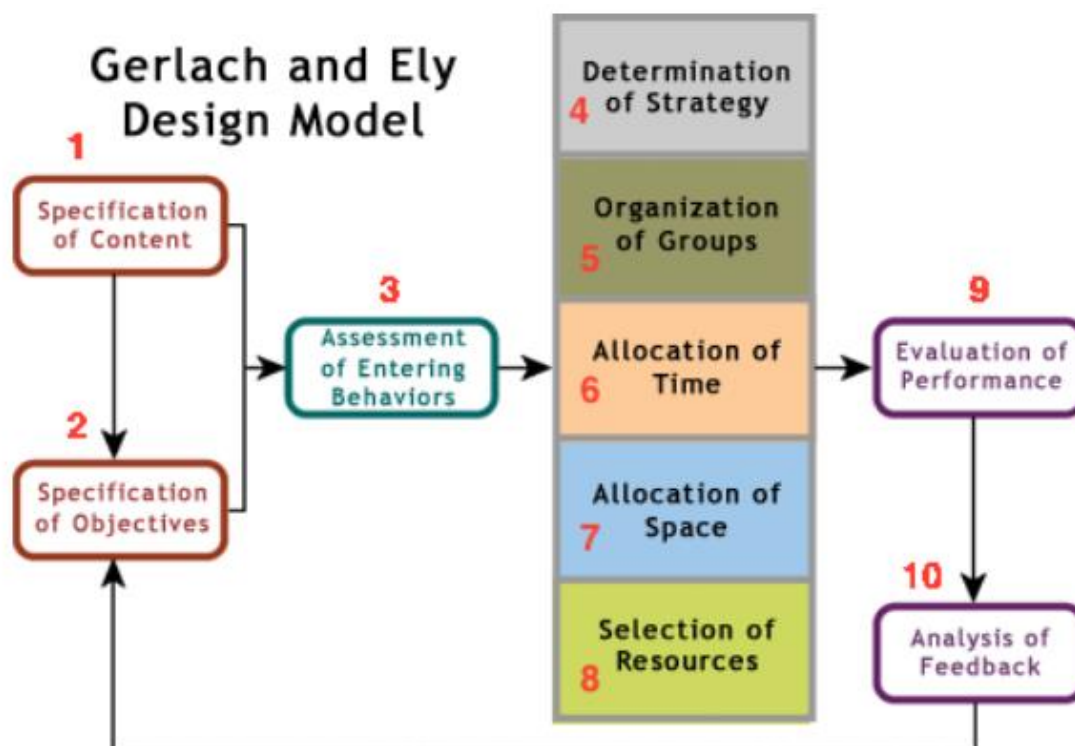


Figure 6. Gerlach & Ely Model (1971)

In these models, there is certainly an *objective or learning outcome* expected to drive the instructional design process as guidance to not deviate educators from the objectives learning or expected learning outcomes. Apart from that, there must be a process which *analyzes the target user or student* at least regarding their level or existing knowledge or their learning style which is either dominant to the visual style or audio or both. Also, it is good to identify students in the classroom whether they are predominantly extroverted or introverted or predominantly thinking using the left or right brain. This identification will be very helpful for planning. However if educators are unable to identify which is dominant, it is preferably that the product or teaching materials are designed with taking into account the diversity of students available. Thus, the use of audio, visual media, video, games, Augmented Reality and Virtual Reality is very helpful in *selecting and diversifying teaching materials*. Finally, there should be an *evaluation* when the media is used in teaching and learning to ensure its implementation is carried out as planned to obtain the learning outcomes as expected.

The second focus of the teaching model is on product development or media development for learning. The example are Kemp Model (2006) and the ADDIE Model. These models focus on the design and development of media however still remains its focus on the process and *input* components such as what is required for analysis requirement phase, stage users and products. In addition, it focuses on the *production process of the product* therefore there must be process or component of design and product development based on findings from needs analysis. The third focus is the need to have a process or *output* component or product that has been tested and implemented to *evaluate its usefulness* to the teaching and learning process. The Kemp model (Morrison, Ross & Kemp, 2006) as in Figure 5 is one of the well-known models that focuses on products.

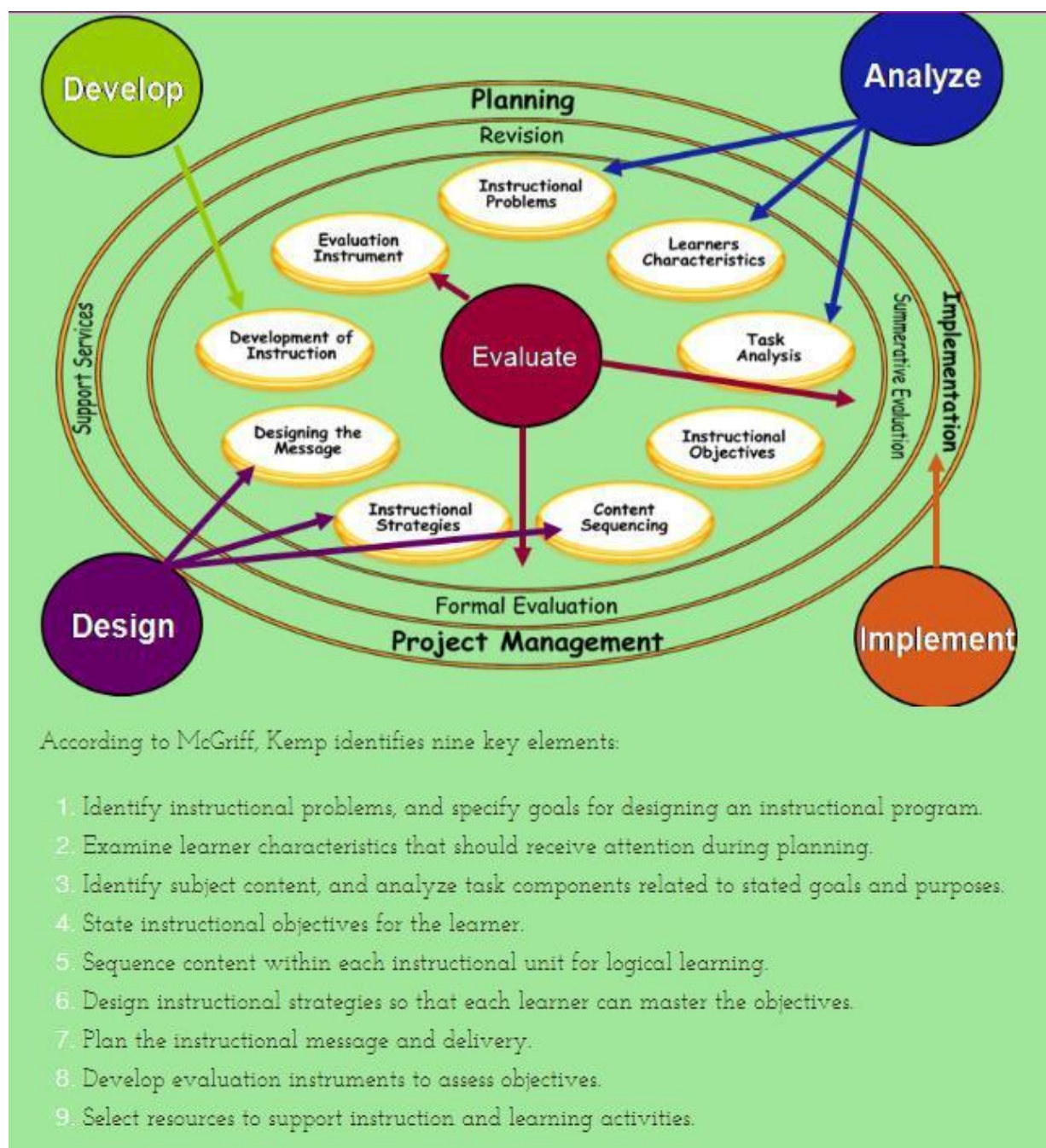


Figure 7. Kemp Model (Morrison et al., 2006)

This model and most other product-based models are derivatives of ADDIE model which contains phases and stages that involved inputs, processes and outputs as discussed earlier with additional phases such as analysis, instructional design, development, implementation and evaluation. The ADDIE model is a common framework model used by many to design and develop product. This model is general in nature and many improvements can be made to tailor it according to suitability and style in planning and developing lessons. Referring to Kemp’s model above, observe all the elements in it which contained similar phases on ADDIE model, as shown in Figure 8 below.

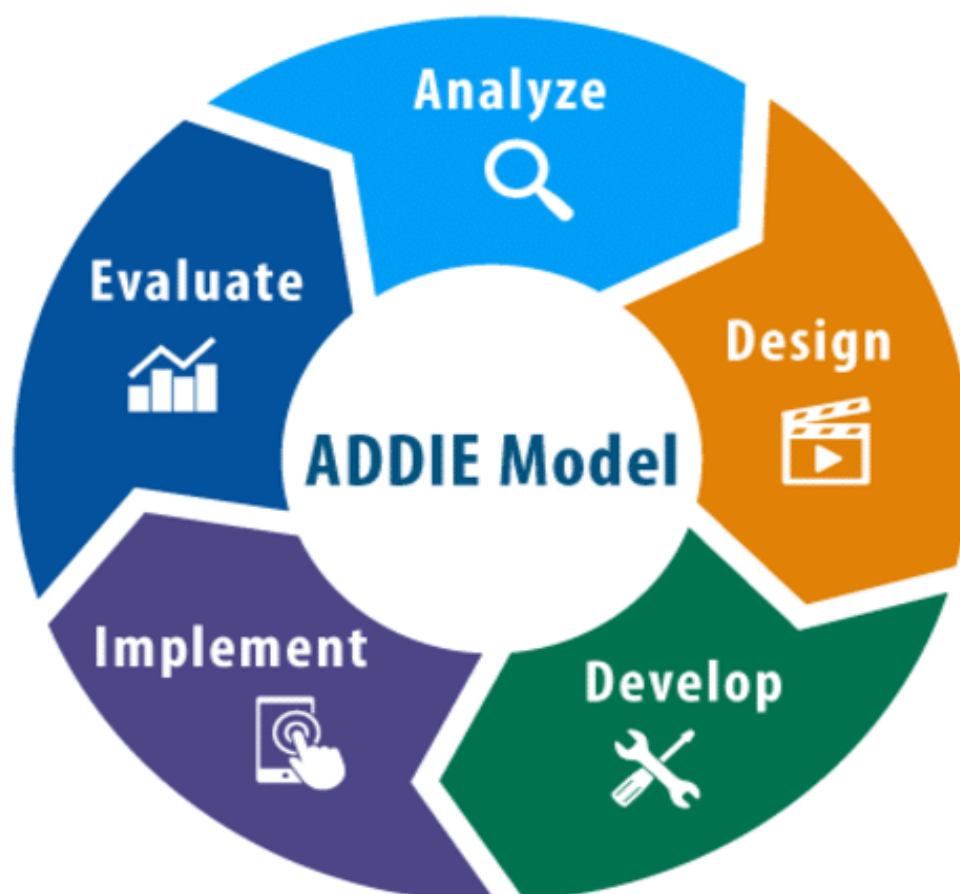


Figure 8. ADDIE Model

The third and final focus of the instructional design model is the design model teaching that focuses on systems or uses a systems approach. The examples are (i) Development Model by Din (2001). This Development Model has its series which ended with the Model of Design and Development of Teaching Systems & Learning IV or better known by its acronym, SPP IV Design Model (Din, 2017a, 2017b). In this third ID model category, there is also IDI Model by Hamreus (1968), The IPISD Model (Branson et al., 1975) and the Systems or Software Engineering Model Engineering Model (Pressman, 2005) as well as Dick & Carey Model (1996). This categorization may differ from one aspect and perspective to another. For example, there is a group of educators categorized Dick & Carey Model (1996) in third category i.e. system-based models but some also categorized it as the first category which is the classroom-based model. However, this model in fact includes both the first and third category features similar to the UDin @ Rengkas model.

To this date, models that integrate ID components like the first category with components in the development phase as in the third category model that closest to the UDin@Rengkas model is the Dick and Carey model. Model that is based on a specific product can be categorized as a system-based model if it involves many product components and it can even be said to be product-based if involves only one learning product.

Forming “Buffet in the Cloud: E-Digestive E-Module With Podcast, Audio Book & Video AR” Model

In the Quran, there is everything but not everyone can see everything in it. Nursi (2011b) states that a bits of it is shown in various levels where what is seen is only the seed of some form of a general picture or its essence or its signs. Thus, one are only able to see one thing whether explicitly, implicitly, symbolically, abstractly or in the form of a reminder. Quran expresses its various purposes in various ways according to current needs and circumstances. For example, airplanes, electricity, cars, telegraph and communication devices as well as various products of science, technology and modern industry that are considered a demand of the times and necessities are not ignored by the Quran.

There are signs in the Quran from two aspects, one is explained through the miracles of the prophets and the other is through parsing various historical events. Education in Malaysia applies 16 noble values in various ways either directly through Islamic subjects and Moral education or indirectly through co-curriculum or across the curriculum (Din & Kilicman 2017; Din, 2018). Din et al (2020) showed that the methods implemented have not been successful to cultivates such noble values for students under the education system in Malaysia as that was parsed by Lewis (2007) in his book “Excellence Without A Soul”. On the other hand, it is also shown that society in Turkey can apply the values learned using methods and educational materials from the perspective of Risalah Nur by leading scholars from that country in the 20th century (Din, 2020). These values help the Turkish state to save its people and become a developed Islamic state. Hence, this study assumes the application of values from Risalah Nur in STEM Technology Education can have an impact in education as it is easier to learn, understand, practice and to cultivate the values in career anf future ahead. STEM-technology education in this study involved three additional media from the existing materials and they are podcasts, audio book and Augmented Reality (AR).

Podcasts are digital audio innovations that can be streamed and listened online through applications such as Spotify, Anchor, Google Podcast and IPodcast. The audio files are digitally created and then uploaded to an online platform to be accessed by people (Phillips, 2017). Podcast listeners can access the audio directly from their smartphone or laptops online and they can also be downloaded in advanced, making it availabe in offline mode. Media podcasts are used in many universities around the world to provide their students with the best and direct resources as well as an accessible support for their studies (Hernawan et al., 2021).

Meanwhile, an audio book is an audio recording of a book, writing or abridged work. Some authors read their own books and there are also works of fiction read by actors. The actors made the story come to life by using different voices for different characters. There are websites that feature free audio books which can be downloaded and nowadays, many people opt for audio books, not just those with visual impairment. Audio books can be listened while doing other activities, such as driving car or on a walk. It is also popular with people who unable to read or individuals who are learning new language. Audio books have become increasingly popular in the digital age with the ability to streaming freely and with subscription services, such as Audible and Spotify, which also provides audio stories to a wide commercial audience.

As for Augmented Reality or AR, it is an area of computer science research combining real world and digital data (Siltanen, 2012). The emergence continues with the latest technology that offer new and exciting opportunities for educators (Achterbosch, 2007). The use of technology in education enables the process of learning becomes more active,

engaging, motivated and meaningful to students as well as to applied the study using Augmented Reality which had obtained positive feedback (Johar & Abdullah, 2019).

Testing The Usefulness of The Model “Buffet In The Cloud” Against Values in Society 5.0

This study uses a survey study design. Method for data analysis is using quantitative method to obtained information related to the use of *content* in “Buffet in the Cloud” System among trainees and students who goes through *value education courses and technology* of 10 modules or at least 20 hours of in-house online learning in any archipelago country with accessibility to the “Buffet in the Cloud” System using Malay language.

Instructional design is a systematic process for translating general principles of learning and instructions towards planning for teaching materials and activities for acquisition of knowledge and skills that is more efficient, effective, and engaging. Instructional designers often use technology and multimedia as tools to improve instruction and teaching strategies. Hence, the main function in this instructional design is to analyze learning requirements and systematically develop a better learning experience using *personalized educational strategies* through *problem-oriented and project-based hybrid learning methods* by applying learning theories and values appropriate to the environment and targets at the time of training and education implementation. The UDin @ Rengkas model is an integrated version agile model for instructional design, development, and modelling the environmental of personalized learning in education (Ishak et al., 2021; Din, 2020a; Din, 2016). It is a transformation model whose evolutionary process took 20 years therefore this model emphasized continuous evaluation. Rubrics are primarily used as assessment tools while the “Learning Outcomes” component is coordinated together with “Assessment” component and collectively, placed in the center as the innermost part of the model labeled “Learning Outcome Assessment” as shown in Figure 9.



Figure 9. Universal Design and Agile Development Model or UDin Model (Din, 2016; 2020)

The conceptual framework of the study in Figure 10 shows that there are maximum of five variables that influence other latent variables formatively. According to the *Rule of Ten* (Hair et al., 2014; Ramayah et al., 2018; Well, 2020) the number of minimum respondents required for this study is 50 people. While according to the G-power method in Figure 11, to ensure a good effect, a total of 92 respondents are required (Nghah, 2020; Ramayah et al., 2018).

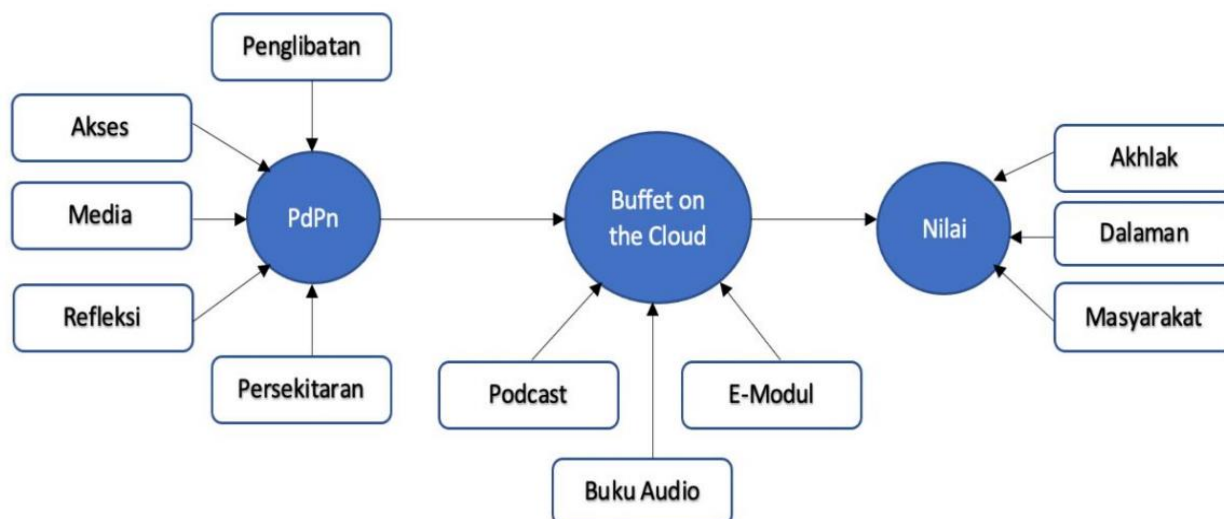


Figure 10. The conceptual framework

Key data were collected through the usability questionnaire of “Buffet on the Cloud” System (BoC) for Value Education across Technology through Personalized Education (BoC-Value-PdPn). SPSS software, Winsteps 3.61 and Smart PLS 3.0 (Ringle et al., 2015) are used to analyze the data. Data analysis using SPSS involved descriptive statistics to show the frequency to further explain the background of the respondents as well as the values applied in the study. Data analysis using Rasch measurement model (Bond & Fox, 2015; Din et al. 2009) with Winsteps 3.61 software (Linacre, 2003) are implemented to ensure validity and reliability of the developed instruments as shown in Figure 4. After the instrument gained trust and validity, Smart PLS 3.0 software (Din, 2019; Ringle et al., 2015) was used for the application of PLS-SEM to test the research hypothesis regarding the relationships and effects (Hair et al., 2014, Hair et al., 2017).

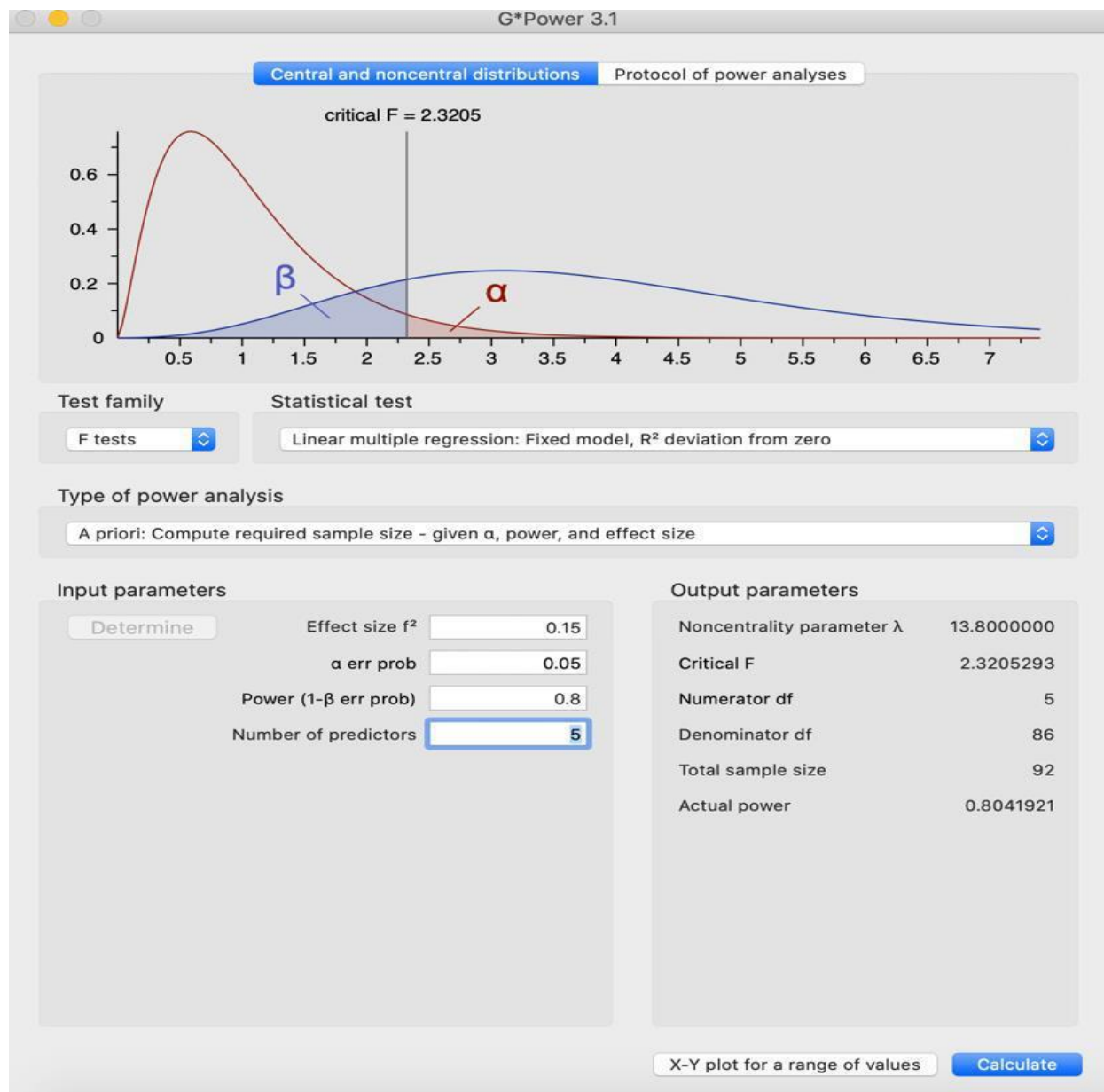


Figure 11: Determination Number of Respondents based on Size Effect using the G-Power Method.

SPSS, Winsteps 3.61 and Smart PLS 3.0 software (Ringle et al., 2015) were used for data analysis. Data analysis using SPSS involved descriptive statistics to indicate the frequency of respondents background as well as the values applied in the study. Key data were collected through the Nilai-PdPn-BOC questionnaire. Data analysis using models Rasch measurements (Bond & Fox, 2015; Din et al., 2009) with Winsteps 3.61 software (Linacre, 2003) were implemented to ensure the validity and reliability of the instrument. After instruments gain trust and validity, Smart PLS 3.0 software (Din, 2019; Ringle, Wende, & Will, 2015) were used for the application of PLS-SEM to test the hypotheses on affinity, impact and modeling (Hair et al., 2014; Hair et al., 2017)

Conclusion

This paper is a critical literature review conducted to cite, analyzing and extracting important themes to implement the latest research that becomes the problem of this study is (i) how to

form a prosperous society in the era of Society 5.0 and (ii) how to apply values from an appropriate perspective to form prosperous society in the era of Society 5.0. Furthermore, the literature highlighted three important themes in forming the conceptual framework of the study which are (i) personalized learning, (ii) Buffet on the Cloud and (iii) value creation from the perspective of Risalah Nur. Further studies are required to identify relevant research gaps in the need to form a prosperous society and values in the era of Society 5.0 using systematic review method, especially critical review to identify research problems empirically. In addition, a systematic review related to the three themes obtained from this study, namely personalized education, Buffet on the Cloud and values from the perspective of Risalah Nur are also necessary to identify relationships between variables prior to empirical studies implemented to form a model of its implementation of validity and reliability tests.

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