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Prof. Dr. Zeki Kaya, Gazi University, Ankara- Turkey
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THE MEDIATED LEARNING EXPERIENCE (MLE) THEORY IN MEANINGFUL LANGUAGE INSTRUCTION

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Abstract
According to Feuerstein Method, people can improve their learning, thinking and analyzing skills. In addition, meaningful instruction for all children is the mediated relationship. It is a fact that everyone has the immeasurable ability to enhance their learning aptitude and heighten their intelligence. In this context, thinking, analyzing and thinking works together for a full learning experience. This study aims to investigate the importance and productive influence of the Mediated Learning Experience (MLE) theory within the context of meaningful foreign language instruction. Fundamentally, the study discusses in what manner the enriched learning environment suggested in MLE affects both disadvantaged learners and the language instructor. The study group comprises of the participants selected randomly among the students ranging from 2nd to 8th grades at a secondary school located in a village, Akören, in Konya, Turkey. The data is obtained with the help of the observation forms and semi-structured interview forms developed for this purpose. The findings indicate that MLE has significant impact on and contributions to the meaningful foreign language learning supporting thinking and analyzing skills.

Keywords: Meaningful instruction, mediated relationship, learning experience, MLE.

INTRODUCTION

The world today is inarguably too different not to be compared with the world before, since human beings are anticipated to adapt themselves towards multiple decisions and crossroads. The ones exposed to numerous stimuli even a day long need to think sophisticated to resist rapid changes and identify their outcomes among different ways, thus benefiting the community itself. Hence, the ultimate objectives of today's education are to provide "the development of thinking and the development of the orientation" (Feuerstein et al., 2010). Reuven Feuerstein, a cognitive psychologist, considers cognition as an adaptive and changeable process, enabling an individual to set and organize a great deal of information and data happening in the environment. What is of significant importance is to expose individuals to various stimuli so as to initiate awareness, offer experience and expand consciousness; hence, to conduce to meaningful adaptation to the world and to deeper understanding. A student is required to be prepared against the technological environment and its rapid development like the one having already gained sharp perception, grasping important aspects beyond certain situations, solving complex problems and deciding rational solutions. These demands of the ever-changing world entail "the process of self-adaptation and modification" (Feuerstein et al., 2010).

The focus of this article is specifically on MLE interactions and exploring their effectiveness of modifiability to enhance children's cognitive development, based on Feuerstein's theory of the Mediated Learning Experience (MLE). The study aims at pointing out the essential idea that the cognitive functioning of a child can be meaningfully modified through mediated learning experiences. The study group is composed of the students in a village, in Konya, Turkey. The village and the school is a setting where there are limited opportunities and insufficient capacity to reach vital sources of learning and instruction.
Mediated Learning Experience Theory and Cognitive Modifiability

Feuerstein puts through the Mediated Learning Experience Theory (MLE) due to his belief in the idea that intelligence is modifiable, which is based on Cognitive Modifiability. Feuerstein attaches remarkable importance and influence on the development of cognitive modifiability that is a process to build the brain's capacity and to facilitate intellectual growth through deeper learning (Shay, 2017). An effective learning process outcomes with the aid of the applications of mediated learning experiences offered by Feuerstein. MLE envisages an effective interaction of the human organism; that is, the learner, with the environment via a human mediator, which occurs through systematic, experiential and structural exposure to stimuli (Feuerstein et al., 2010). Mediated learning is basically an opposite movement that can be seen the replacement of the behaviourist's model by more cognitive. Fundamentally, mediated learning propounds a mediator, generally a teacher, a parent and a caregiver responsible for a child's development sort out relevant from irrelevant.

There is a common but deceptive belief in the power of learning through direct exposure and experience. The preconceived perception of intelligence as an innate and hereditary part of human beings has gradually replaced by the fact that intelligence is modifiable. On the other hand, Feuerstein maintains that the genetic or hereditary influence of intelligence cannot be disregarded, but it is not acceptable as the end of one's story (Feuerstein et al., 2010). Accordingly, what makes Feuerstein different from others, especially from contemporaries, and to step forward beyond the traditions is the reality that while others are interested in changing only materials for learners in accordance with their difficulties in learning, Feuerstein intensively focuses on modifying the learners at first hand. Feuerstein aims at enriching the individual's environment to develop adaptable capacities for a better life rather than shaping the circumstances according to his/her current level (Feuerstein, Rand and Rynders, 1988). Furthermore, Feuerstein pays close attention to "the inner structure of cognition" and the ways to learn "how to learn" apart from the context itself (Seng, 2003). During the application of the MLE process, the child as a mediatee initiates to internalize the external stimuli, which triggers and facilitates "an integrated mechanism of change with the child" by means of modifying meaningful intervention or interaction (Tzuriel, 2013). The appropriately applied MLE process helps learners act independently and think and imagine holistically on diverse contexts through self-mediation.

Unfortunately, the works of Feuerstein and his theory of Mediated Learning Experience (MLE) cannot come to light deservedly. Notwithstanding, its concern, becoming well-known only in the 1990s, to disadvantaged learners can find its way into wider applications in terms of contemporary classroom teaching.

According to the MLE theory, learning is conducted by two types of situations; direct learning that is a spontaneous and unmediated exposure to the stimuli, and mediated learning that describes an intended qualified interaction between a mediator and a learner as seen in Figure 1.

Figure 1: The mediated learning experience (MLE) model taken from Don't Accept me as I am, Helping “Retarded” People to Excel by Feuerstein R. & Rand, Y. & Rynders, E.J. (1988).
The direct approach is based on Piaget's formula of **S-O-R**. It must be noted that Feuerstein was once a student of Jean Piaget. In this model, the direct exposure can be explained as random; that is, unmediated and incidental relation of individuals within the stimuli in their environment. In Figure 1, the arrows at the top and bottom out of the stimuli (S) towards the organism (O, representing a learner) indicate a direct exposure. On the other hand, Feuerstein reforms and develops Piaget's formula of **S-O-R** by attaching a human mediator (H) between the stimuli (S), the organism (O). As seen in Figure 1, the arrows from the S to the H (Human) and then from the H to the O are represented by MLE interaction that coordinated by an experienced adult—generally a child's parent. Shown with the H symbol, the mediator offers the stimuli to the learner as s/he modifies "their frequency, order, intensity, and context; by arousing in the children curiosity, vigilance, and perceptual acuity; and by trying to improve and/or create in the child the cognitive functions [...]" (Tzuriel, 2013).

Piaget's theory accepts simple and active but spontaneous interaction with the outside world enough to improve cognitive development and construct thinking schemata. The active dialogue with nature without any modification is insufficient to derive the most benefit from the encountered sets. Learning mostly takes place through direct experiences; that is, we see things, hear voices, and grasp them. Feuerstein indicates that, as the most adapted learning process, learning through direct experiences can correspond to neither the meaningful learning, nor the potential for modifiability. From this point of view, MLE explicitly offers modifiable interactions. The mediation process is carried out intentionally to form one's interaction with the world and to shape the experience (Feuerstein et al., 2010).

Within the scope of this approach, there is no importance or consideration for the role of a human "as a bearer of the human culture that has accumulated over thousands of generations and as its transmitter." In essence, MLE is an active method of experience as a result of the interaction with the world itself. Within a mediated learning process, a human mediator is more of an issue to guide or modify the meaningful learning; "the organism (O) being directly exposed to stimulus (S) reacts and responds (R) with skill and completeness only after the characteristics of the stimulus have been sorted out, classified, differentiated, shaped and adapted, and organized by a mature human mediator (H)" (Feuerstein et al., 2010). The mediator (H) is flexible and "elastic." S/he adjusts mediation based on the learner’s phase of learning and the difficulty and improvement level. In other words, a meditational process is related to the mediatee's cognitive functions, deficiencies in learning abilities, motivation, behaviours and needs. Herein, a human mediator takes the greatest responsibility for overcoming the limited potentials to mediate and to develop deeper understanding effectively.

Feuerstein provides 12 criteria considering MLE; however, he also indicates that only the first three criteria can be considered sufficient and universal, and required to adapt the MLE interactions to the processes. These are intentionality and reciprocity, meaning, and transcendence, which are regarded as universal since there can be found certain traces of which in all races, cultures and ethnic groups (Tzuriel, 2013).

**Intentionality and Reciprocity**

Intentional mediation comes out when the mediator deliberately and systematically aims to change and guides the child's alertness, perception and awareness by interpreting the specific stimuli to convey an explicit intention to the child so that the content can be more understandable, salient and meaningful through the process. Nevertheless, focusing merely on changing the stimuli is not adequate for MLE interactions. Reciprocity implies an exchange of responses to the stimuli between the mediator and the mediatee. In this relational aspect, the mediatee is frankly set to the input given by the mediator and presents any respond verbally or nonverbally to it. At this stage, the mediator proposes another adjustment for the mediatee's flow of the responses to having the stimuli grasped by him/her as a result of the mediator's observations. According to Tzuriel (2013), this process is vital for the "ignition" of the MLE interventions.
Mediation of meaning

There can be mentioned the mediation of meaning in the time when the mediator explains and emphasizes the significance and necessity of the presented stimuli. Feuerstein and Feuerstein state that the mediation of meaning as "what creates the motivational and emotional forces that drive our activity and our behaviour" (Feuerstein et al., 2010). To put forward "whys and wherefores" of the intended content triggers the attention of the mediatee and makes the meaning reasonable, substantive and apprehensible, thus conducting the mediatee to challenge and go beyond the given cases or phenomena so as to build up his/her intrinsic motivation and self-awareness, which sets up the background of the main criterion; that is, transcendence (Brown, 2002).

Transcendence

The transcendentnal part of the MLE interaction constitutes the need to overstep the intended task. It substantially indicates "the transfer of learning across context and situations" (Seng, 2003). The need of learn how to learn occurs and the learner transmits what is learnt to the real life situations and creates a new one beyond direct experience, thus "resulting flexibility and creativity of response".

There are two categories that cause lack of MLE; the former of which is the lack of the ability of the child to get benefit from the meditational process due to his/her mental or physical disabilities, and the latter is the lack of environmental opportunities that are the cases this study basically concerns with. This situation might be related to parents' inadequate education level, negative events that the child has experienced before, unqualified applications of the MLE strategies. MLE interactions mediate the stimuli according to the individual differences in learning caused by poverty, economic status and physical depict. These barriers can be eliminated within the application of the process of modifiability. But what is of importance is to realize the barrier and offer supporting and effective activities for the potential (Feuerstein et al., 2010). Several different kinds of methods are taken into consideration in the process of mediating students in their learning periods. These methods substitute for a mediator to empower effective learning within an enriched environment. It is essential to figure out that cognitive and intellectual skills of disadvantaged students having a potential to learn, but being lack of equal opportunities due to their areas of residence that are out of both the distinct and province can be modified to gain utmost benefit from experiences and interactions with the outside world. Feuerstein indicates that these students are culturally deprived of required learning situations; as a result, their modifiability is restricted by the insufficiency and failure to fulfilment in reaching learning opportunities.

The Aim of the Study

Mediated Learning applications provide educators and teachers to actively modify the thinking ability of the students who are disadvantaged. The objectives of this approach are not to overcome a difficulty or teach a specific skill but to teach learners how to learn in order to cope with different situations. Together with the help of the Mediated Learning, learners experience certain changes at their cognitive levels which enable the learners to become independent, flexible and efficient. Adequate mediation is needed to arouse motivation, attention and curiosity, thus focusing on specific situations and providing meanings to stimuli and activating internalization of what to be learnt. Within the framework of this study, adequate mediation processes have been conducted through a human mediator in a form of organized learning activities. One of the central concerns of this study is to find out what cognitive activities can be performed with learners to help them internalize the new experiences and how effective and functional the mediating processes are in particular.

METHOD

A qualitative research approach is applied for this study. In this study investigating the importance and productive influence of Reuven Feuerstein's Mediated Learning Experience (MLE) within the context of meaningful foreign language instruction, the data is obtained with the help of the semi-structured interview and observation forms developed for this purpose. The underlying reason behind why this method is followed is to accurately describe the opinions and feelings of both the learners
and the language instructor in detail. Essentially, the semi-structured interviews are widely used conversational meetings holding remarkable potential together with its flexibility “to address specific dimension of [...] research question while leaving space for study participants to offer new meanings to the topic of the study” (Galletta, 2013). Different from formal interviews, which are practiced a set of rigid questions asked for interviewees, semi-structured interviews can be claimed as a unique method to uncover "the motivations behind people's choices and behaviors, their attitudes and beliefs" (Raworth, Sweetman, Narayan, Rowlands and Hopkins, 2012).

The other method that is used in the framework of this study is conducted as an observation method which is an empirical research followed literally by the language instructor as to construct casual explanations and "to develop a holistic understanding of the phenomena under study that is as objective and accurate as possible given the limitations of the method" (DeWalt and DeWalt, 2002). In this context, a case scenario exploring intended activities in a secondary school class was held by the researcher herself as a mediator to illustrate how MLE process was brought out by emphasizing the MLE parameters. The study group comprises of the 7th grade students, selected randomly among the students ranging from 2nd to 8th grades, in the school. In particular, the study is limited to possibilities and facilities of a secondary school located in a village of Akören, in Konya, Turkey.

Data Collection and Analysis
The data of this stuffy has been obtained with the help of two instruments. The semi-structured interview forms consisting of three open-ended questions that allow the interviewee flexibility, developed by the researchers, were effectively utilized, and the data was obtained from the transcripts recorded and notes taken by the researcher during the interviews. And, the observation forms, inspired by the influential studies of Tan Oon Seng (2003) and developed by the researchers were effectively utilized, and the data was obtained from the notes and codes taken by the researcher during the observation process.

Before starting both the interviews and the video recording, the selected students were provided with a detailed overview of the purpose, taken permission for the recording and note-taking and also explained intended usages for the data by guaranteeing anonymity. The video recordings were firstly turned into the text carefully and made an authentic translation in English by the researcher. Additionally, the data from the observation notes of the researchers were gathered by observing the behaviours and attitudes that the participants displayed within natural environments. Eventually, the data obtained at the end of the research process were evaluated through interpreting and coding textual method. The ultimate findings were considered to figure out the effectiveness of the mediation process applied at class and the differentiation between the mediation process and the one applied before.

FINDINGS

Observation Process and Application of Mediation Interaction
The researches on MLE processes have been carried out mostly by videotaping and note-taking of the interaction during the classes and analyzing them later by the researcher using an observation form developed for this purpose. After this processes, the results have been coded in the form under appropriate parts that are determined in accordance with the three universal criteria of the Mediated Learning Experience; Intentionality and Reciprocity, Transcendence, and Meaning. To illustrate when the mediator tries to focus the learners’ attention on the stimuli, it has been coded as Intentionality, and when the learners response it, it has been noted as Reciprocity. When the mediator goes beyond a generalize rule or a concept, this process has been coded as Transcendence. Besides, Meaning has been coded at the time when the mediator offers the main purpose of an activity.

The findings obtained at the end offer an elaboration of the MLE theory. The effects of distal factors; that is, socio-cultural depravations and poverty, on children’s cognitive modifiability have considerable effects on children's cognitive modifiability. As a mediation process is applied, the enhancement use
of MLE strategies can reduce the effects of the distal factors on cognitive modifiability. The case scenario of an English lesson presented in Table 1.

Table 1: A Classroom Scenario of MLE

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>It is another English lesson for the 7th grade students. The teacher comes into the classroom with different chemical materials to arouse a sense of excitement and curiosity. Besides, the teacher informs the students that they are going to watch some informative videos during the lesson.</td>
</tr>
<tr>
<td>Stage 2</td>
<td>The teacher announces to the class &quot;We are going to learn phrases and vocabulary about environment and to write short and simple messages about the environment.&quot; Also, the teacher adds with a determined and gentle voice that &quot;We are going to learn important issues for our world.&quot;</td>
</tr>
<tr>
<td>Stage 3</td>
<td>The teacher asks that &quot;We do not have another planet to live in, and we have some duties and obligations towards our world, right? Do you think that we are responsible for it?&quot; The students say &quot;Yes&quot; as a reply.</td>
</tr>
<tr>
<td>Stage 4</td>
<td>The teacher and the students study on certain vocabulary and phrases to use later, and the teacher recalls of necessary information and review the modals &quot;must&quot; and &quot;should&quot; to help them put to use in their writings during the next process. Later, they all watch different important videos about our planet, global warming and the negative effects of it. This part is followed by some critical questions directed by the teacher in order to make the students to think on our planet. The teacher asks &quot;Why is our planet in danger?&quot; &quot;Why is there a global warming?&quot; What do you think the problem is?&quot; &quot;What and who cause the global warming?&quot; &quot;How do we prevent it?&quot; &quot;What should we do as human beings?&quot;</td>
</tr>
<tr>
<td>Stage 5</td>
<td>During this part of the lesson, the students are divided into groups to work with each other. Each group is expected to make a poster about our environment, choose a slogan for our planet and determine what to do for a better world. Every poster of the groups has a unique and different pattern depending on the students' creativity. Then, they are supposed to go beyond the class itself. They show their posters to other friends from a different city, and tell them why they prepare such a poster.</td>
</tr>
</tbody>
</table>

Note: By the end of the class, almost all students are able to understand and identify specific information in various activities about our planet. The students have remarked that "I know my responsibilities for our planet and I can express them in English."

Table 1 demonstrates several activities to carry out the interaction the teacher and the students. When considered Table 2, it figures out the quality interaction between the teacher as a mediator and the students as mediatees and how parameters are applied.

Table 2: MLE Parameters applied in the case scenario

<table>
<thead>
<tr>
<th>Scenario</th>
<th>MLE Parameters</th>
<th>Key &quot;observations&quot; about the learners and the teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>GO (Goal seeking) IR (Intentionality and Reciprocity)</td>
<td>The learners: There was excitement and curiosity. The teacher: She offered obvious learning objectives, different learning materials and attentive planning.</td>
</tr>
<tr>
<td>Stage 2</td>
<td>IR (Intentionality and Reciprocity)</td>
<td>The learners: They were basically provided with what to be learned. The teacher: There was a clear intention and explicit purpose about what to teach.</td>
</tr>
<tr>
<td>Stage 3</td>
<td>ME (Mediation of Meaning) IR (Intentionality and Reciprocity)</td>
<td>The learners: There was the awareness of meaning. The teacher: She provided them with some explanations and tried to ensure engagement of students' attention</td>
</tr>
</tbody>
</table>
and interest by asking questions.

<table>
<thead>
<tr>
<th>Stage 4</th>
<th>IR (Intentionality and Reciprocity)</th>
<th>The learners: They are to recall and think critically about the knowledge, reflecting it to their outcomes. The teacher: She fostered thinking and learning in new and different circumstances.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RP (Reflective Practice)</td>
<td></td>
</tr>
<tr>
<td>Stage 5</td>
<td>T (Transcendence)</td>
<td>The learners: They were provided learning across context and transferring knowledge to various situations. They were able to state &quot;I know.&quot; The teacher: She facilitated creativity and fostered thinking about critical solutions for a problem. She gained a sense of competence for the students while transferring their knowledge to another setting.</td>
</tr>
<tr>
<td></td>
<td>FC (Feeling of Competence)</td>
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</tbody>
</table>

At *Stage 1*, it is possible to see the first encounter of the students with the stimuli. The teacher came to the class with different materials related to the subject to raise students’ curiosity and eagerness to learn. The attention of the students tended towards the interaction with the teacher. This stage refers to *Intentionality* that guides the students’ awareness.

During *Stage 2*, the teacher provided the students with an explicit intention of the lesson and acquainted them with what to be learnt. This stage is also related to *Intentionality* that gives an expressed goal to the students.

For Stage 3, the teacher offered the meaning of the stimuli by giving some explanation about the subject. This process offers a meaningful context referring to *Mediation of Meaning*. During the following steps, the mediator fostered critical thinking process by asking some questions. The students returned with positive responses corresponding to *Reciprocity* that is one of the important criteria of MLE. During this stage, she provided a critic response from the students to her intention.

At *Stage 4*, the students were expected to reflect their previous knowledge about the subject called Modals to another situation. Additionally, in order to apply *Intentionality*, process questioning was used in the cognitive process. The teacher asked several questions, and the questions were to challenge the process itself. This refers to the idea that the teacher asked "why" and "how" question: "Why is our planet in danger?" These question forms are significantly important as a cognitive tool since they lead the learners to focus on thinking processes, to analyze and identify the problem itself and encourage them to conceive the situations critically.

*Stage 5* encourages the learners to think of different applications of the strategies about the matter in question, which refers to *Transcendence*. The teacher provided them with a task, directing actively toward the solution. The learners were supposed to work and learn together. They transferred and adapted their learning into daily life situations to arouse awareness against the planet. The teacher allowed them to act independently, encouraged creativity and productivity and reinforced their feeling of competence, which leads to the participatory behaviour in the learners.

After these application processes, the teacher carried out short interviews with the students to find out what the students thought about the lesson. When considered the transcripts and the summarized information from the interviews, the data was phrased and translated into English by the researcher according to the students’ answers:

Student A said: *We are informed about what to be learnt and we become ready for the lesson. When we use different materials, our lessons are more enjoyable. We learn better than before.*

Student B stated: *I am not bored during the lessons. I know why we learn English. Today we have created different posters and written our slogans. It is a good way to pay attention to global warming.*
Student C said: *Now, I am much more eager to learn English. We use the language in different situations.*

Student D remarked: *I love English classes. Our teacher sets different activities to make our English useful. I like these kinds of activities.*

The statements of the students enlighten that the applied processes provide more effective life-wide and social learning and mediate cognitive development in the learners. These interactions mediate the meaning of the world to the students. They help the students to comprehend clearly events, objects and situations. It is through mediated learning experiences that the language learning context becomes meaningful, and an in-depth understanding occurs. The learners can use various vocabularies and demonstrate greater performance, and becoming more enthusiastic and engaged in learning. This systematic training proposed by the MLE theory modifies the structure of learner's cognitive potential and ensures the acquisition of basic concepts and the development of the active learning attitude, "comparative behaviour, systematic search, problem definition, planning" (Seng, 1997). Mediated learning sessions can develop learners' ability and skills and strengthen their task-intrinsic motivation, empowering a sense of self-confidence and helping them to take responsibility for their own learning. As a result, the students become able to develop an appropriate thinking and behaviour to situations and stimulus.

The key aspect is that the focus of the meditation is on the process of learning rather than on the output at the end. Students are opened up an opportunity to apply what they have learned in other context and to discuss it. The teacher as a mediator has a role to guide but not to dominate the process, thus overreaching "a scripted transmission model" (Yarmus and Vagliardo, 2014). Therefore, teachers' responsibility is not to design multiple presentations of the context but to engage students in the expression of learning to make them internalize their understandings.

**DISCUSSION**

The theory of Feuerstein indicates the possibility of modifying intelligence through a systematic, structural and adequate provision of mediated learning experience that contributes to the functioning of human beings. Mediated learning experience purposefully shapes human experience and the development of human beings. Essentially, MLE promotes a qualified interaction between the mediatee and the stimulus mediated by a human that releases "flexibility, sensitivity, readiness and desire to understand what is going on, and capacity to generalize it over and above the isolated phenomenon that is being expected" (Feuerstein et al., 2010). On the other hand, lack of MLE results in a deprived and reduced modifiability of the human organism. For that reason this study is mainly conducted with the students who continue their lives in a socially limited environment and have negative socio-economic conditions affecting the capacity of the auto-plasticity of them. The empirical findings of this research demonstrate the effects of the cognitive studies on students' potential for modifiability. Additionally, MLE has significant impacts and contributions on the meaningful foreign language learning with the help of thinking and analyzing skills. When considered from another point of view, the MLE model provides teachers to reconsider their roles as a mediator. MLE gives a role of being "facilitators of the learning", "mediators of knowledge source", "mediators of lifelong learning", and "designers of the learning environment" (Seng, 2003). Fundamentally, the study discusses in what manner the enriched learning environment suggested in MLE affects both disadvantaged learners and the language instructor.

One of the reasons that prevents the changes within the learners who need special education is the homogenous environment in which the learners are expected to function at a same level. These motivation-blocking environments drag the learners to "a passive approach that accepts the persons as they are and does everything to prevent the appearance to tension between current levels of
functioning and the level required in a modification-encouraging environment" (Feuerstein et al., 2010). Not embracing the notion of modifying the situation causes to accept a person passively. Hence, the MLE theory is basically based on the belief in even the slightest possibility in modification. What educators need is to comprehend and appreciate the essential message of the MLE theory that enables new perspectives, skills, awareness and acquisitions. All educators should voluntarily take action to modify their learners with "an active, continuous, and multifaceted development and application of strategies." When considered in this point, educators are expected to leave their role of "a content disseminator" and take the responsibility to act as a facilitator who brings forth meaningful learning, self-competence, intentional behaviours and familiarity with novelty (Feuerstein et al., 2010).

Mediation process is invariably applicable and beneficial even if learners cannot have an opportunity to receive an appropriate mediation in time and become late to modify themselves regardless of the various barriers such as environmental problems, socio-economic conditions and mental disorders. I am personally of opinion of disseminating the MLE theory around the country and elaborating the concept of the MLE processes as one component within a holistic framework in addition to the national curriculum. As Feuerstein et al. remark, "Every change that takes place in a part changes the whole to which it belongs" (Feuerstein et al., 2010).

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HIGHER EDUCATION’S CYBER SECURITY: LEADERSHIP ISSUES, CHALLENGES AND THE FUTURE

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Abstract
Cyber security is a major concern in all industries, but is particularly of concern to leaders in higher education. The academy’s housing of major biographical and financial data, in addition to data related to research and development of new technologies, makes colleges and universities susceptible to cyber attacks. The coordination, implementation, and direction of cyber security has subsequently grown to be a major concern on college campuses, with the campus leader or president typically having ultimate authority over cyber security strategy. Using a research-team developed survey instrument that was administered to 150 college presidents, the current study sought to determine the extent of senior college leaders involvement in cyber security. Study findings revealed that the authority for cyber security strategy was predominantly distributed to the senior information or business officer, that there are major concerns about the safety of data related to financial, student, faculty, and donor affairs, and that about half of college leaders talk about cyber security related issues 2-6 times per week. Further research that explores how decisions are made about cyber security priorities, as well as how to best provide training for better cyber security decision-making were recommended.

Keywords: Higher Education, Cyber Security, College Presidents, Technology in Higher Education, Decision-Making.

INTRODUCTION

Higher education has grown increasingly complex, and the range of issues that college leaders face has changed significantly in the past two decades (Ruscio, 2017; Kezar, 2010). A particular challenge has been the evolution, use, and management of technology (Mungo & Clough, 1993). Evolving from providing photocopy services and early computer labs, institutions now rely on complex information system structures to manage the entirety of their campus’ operations. These functions include everything from applications that contain sensitive and confidential information to financial billings, accounts receivable, human resources data, classroom and academic information, and even coded electronic entry management systems for room and building access. There is no element of the contemporary university that is immune from the pervasive growth and infiltration of technology (Daly, 2012).

Within the past 20 years, the issue of technology safety has become a significant issue that college leaders, especially presidents, have had to become proficient with. Initial concerns about ‘hacking’ email have grown to be a significant, comprehensive data protection system concern. As a society, Ashford (2018) estimated that over $1 million is lost in cyber related crime every minute, and that nearly 2,000 people are victim of cyber related crime during that same time frame.

In the academy, Goral (2014) noted that perimeter security is no longer an issue, cyber security is a system and structure that must exist within systems. He categorized two types of cyber security criminals: those who are part of organized criminal gangs, including foreign bodies, and those who
focus on long-term ‘sieges,’ attacking a campus over a long period of time. He also reinforced the idea that universities, particularly research universities, are a prime target for cyber criminal activity.

The result of cyber crime has a strong financial element, as criminals look to find access to money that they can syphon to their own accounts, but also knowledge related data that can impact technology transfer and copy and patent filing. Fishman, Clark, and Grama (2018) also identified the extreme peril and risk for cyber security for a campus in terms of reputational damage and operational damage. Their report, part of the Deloitte Center for Higher Education Excellence’s work, particularly called for strong higher education leadership to combat cyber criminal activity, and that this leadership, at the highest level, must both coordinate activities, but also stress the need for communication between campus agencies and offices and keeping cyber welfare at the forefront of campus actions.

Due to the comprehensive nature of higher education’s services and span of offerings, they are of particular risk to cyber related crime. Multiple users of hardware and software (both internal and external to campus), a broad array of sensitive data ranging from Social Security numbers to credit card and bank accounts, and a global presence all add to the challenges facing colleges and universities. Set against this backdrop are college leaders who until very recently followed a traditionally academic focused career path to assume a presidency (Braswell, 2006). Expertise in an academic discipline, however, has rarely proven to be an adequate training for handling the complexity of roles of the contemporary college president, including, but certainly not limited to, cyber security. Therefore, the purpose for conducting the current study was to determine the extent of senior college leaders involvement in cyber security.

BACKGROUND OF THE STUDY

The American college presidency has evolved dramatically along with the structure, function, use, and composition of the college and university (Tolliver & Murry, 2017). Early college presidents were involved in every aspect of the institution’s management, whether purchasing food for students, directly hiring faculty members to teach, and even collecting cash tuition payments from students and their parents. The evolution of the institution, including the implementation of academic departments, has led to a greater level of sophistication in the presidential role, with some considering the position very similar to that of a political figure. The position has even been described as one of the most stressful, complex, and difficult of any senior executive position (Thomason, 2018).

With the evolution of the college president position, a variety of skills and abilities have become more prominent than in past decades (Morris, 2017). The contemporary college president provides leadership to complex systems that involve a broad array of state and federal rule and regulation compliance, a pace and growth of knowledge that has never before been experienced, management and solicitation of a more diverse revenue stream, and calls for accountability from a wider, more complex, and geographically diverse group of stakeholders (Cook, 2012).

One result of the changing responsibilities facing college presidents is their increasingly diverse preparation and career progression prior to assuming the presidential role. Braswell (2006) noted this diversity of career experiences, citing the rising number of college presidents coming from public service, the business sector, the military, and increasingly, non-academic backgrounds from within the academy. This broad labor preparation for these positions has been augmented by a growing number of professional preparation programs for college presidents, some of them sponsored by academic or professional associations and some of them sponsored by colleges and universities. An increasingly common curricular component within these training programs has become technology management and cyber security. The Western Interstate Commission on Higher Education, as well as Homeland Security, have similarly begun working to support higher education leaders in managing their cyber security efforts.
In addition to administrative training programs, multiple institutions have begun academic programs related to cyber security. Arizona State University, the University of Arizona, Syracuse, Georgetown, and the University of California-Berkeley all offer formal degree programs, for example, in cyber security.

Some college leaders, however, still find the process and attempts to effectively manage cyber security to be a massive and expensive undertaking. Daub (2018) reported that in response to these complexity and cost issues, a consortium of leading research universities created a partnership to better manage their cyber security policies and platforms. Led by Northwestern, Purdue, Nebraska, Indiana, and Rutgers, this partnership (OmniSO) has come to be seen as a leading example of pooling expertise and resources to combat the growing challenge of cyber security.

RESEARCH METHODS

Due to the emerging nature of cyber security in higher education, a descriptive research design was determined to be appropriate to address the purpose for conducting the study. A research-team survey instrument was developed based on concerns, ideas, and issues presented in both the academic and professional literature in cyber security. This 8 item survey instrument was distributed to a panel of experts for review, with clarifications identified and made to the instrument to assure face value validity. Additionally, review of the instrument for face validity was conducted by professional staff associated with a leading national association located in the mountain-west United States. Following these reviews, changes and modifications to wording were completed.

The first 7 survey questions were designed to understand who was completing the survey and general impressions and practices within higher education’s senior leadership regarding cyber security. The last question contained 10 statements, requesting survey respondents to rate their agreement with each on a 5-point Likert-type scale (ranging from 1=Strongly Disagree progressively to 5=Strongly Agree).

The sample included 150 randomly chosen college presidents. Using an on-line available listing of US colleges and universities of approximately 3,000, 150 institutions were selected for inclusion in the study. Following the identification of the institution, each was manually explored online to identify who was the institution’s campus leader was (chancellor or president title) and the individual’s email address. Three of the institutions did not provide a name for the senior leader role, and these were replaced in the sample. Additionally, the institutions with interim leadership were removed from the sample.

The survey instrument was distributed electronically in the winter of 2019. Four email reminders were used to provide those identified in the sample ample opportunity to participate in the study.

FINDINGS

A total of 16 surveys were completed and deemed usable following the initial survey distribution, with 3, 11, 4, and 5 surveys completed following each email reminder. The total response was 39 usable surveys for a 26% response rate. This response rate was deemed appropriate for the descriptive nature of the study and the online format of survey distribution.

Despite the survey being addressed to the campus president, the majority of those completing the survey held support positions to the president (n=13; 38.2%), although a near-equal percentage of presidents completed the survey themselves (n=11; 32.4%). As shown in Table 1, several chief/senior information officers also completed the survey (n=6; 17.6%), as did several representatives of a systems office (n=4; 11.8%). Nearly all of these individuals indicated that cyber
security is an extremely or very important institutional priority ($n=33; 97.19\%$), and that their campuses prioritize work on cyber security ($n=32; 96.9\%$).

Table 1: Descriptive Information from Respondents

<table>
<thead>
<tr>
<th>Question area</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of Respondent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support position to Chancellor or CIO</td>
<td>13</td>
<td>38.3</td>
</tr>
<tr>
<td>Chancellor/President of campus</td>
<td>11</td>
<td>32.4</td>
</tr>
<tr>
<td>Chief/Senior Information Officer</td>
<td>6</td>
<td>17.6</td>
</tr>
<tr>
<td>Higher education systems level leader</td>
<td>4</td>
<td>11.8</td>
</tr>
<tr>
<td>To what extent is cyber security an institutional priority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely important</td>
<td>14</td>
<td>41.2</td>
</tr>
<tr>
<td>Very important</td>
<td>19</td>
<td>55.9</td>
</tr>
<tr>
<td>Moderately important</td>
<td>1</td>
<td>2.9</td>
</tr>
<tr>
<td>To what extent does your campus prioritize work on cyber security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely important</td>
<td>14</td>
<td>42.4</td>
</tr>
<tr>
<td>Very important</td>
<td>18</td>
<td>54.5</td>
</tr>
<tr>
<td>Moderately important</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>How often is cyber security discussed with senior institutional leaders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Once a week</td>
<td>13</td>
<td>39.4</td>
</tr>
<tr>
<td>2-3 times per week</td>
<td>9</td>
<td>27.3</td>
</tr>
<tr>
<td>4-6 times per week</td>
<td>6</td>
<td>18.2</td>
</tr>
<tr>
<td>Once a month</td>
<td>4</td>
<td>12.1</td>
</tr>
<tr>
<td>Should more time be devoted to cyber security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20</td>
<td>60.6</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>39.4</td>
</tr>
<tr>
<td>Primary responsibility for assuring that CS is on the institutional leadership’s agenda</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIO</td>
<td>16</td>
<td>48.5</td>
</tr>
<tr>
<td>Business Affairs/Admin Services</td>
<td>15</td>
<td>45.5</td>
</tr>
<tr>
<td>Academic Affairs</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Campus leader (president)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Primary areas of concern for cyber security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial data</td>
<td>30</td>
<td>76.9</td>
</tr>
<tr>
<td>Student issues/data</td>
<td>29</td>
<td>74.4</td>
</tr>
<tr>
<td>Faculty and employee data</td>
<td>27</td>
<td>69.2</td>
</tr>
<tr>
<td>Donor and philanthropic data</td>
<td>22</td>
<td>56.4</td>
</tr>
<tr>
<td>Institutional records</td>
<td>20</td>
<td>51.3</td>
</tr>
</tbody>
</table>

Also shown in Table 1, over half of the respondents ($n=20; 60.6\%$) indicated that more time should be spent on cyber security efforts, and the majority also indicated that the chief/senior information officer ($n=16; 48.5\%$) or senior business affairs/administration officer ($n=15; 45.5\%$) should lead these efforts. These respondents also indicated that they discuss cyber security with the senior leadership team at their institutions on a regular basis, including 39.4\% ($n=13$) who discuss cyber
security once per week, 27.3% 2-3 times per week, and 18.2% 4-6 times per week. The most common concerns for cyber security issues were financial data \((n=30; 76.9\%)\) and student issues and data \((n=29; 74.4\%)\).

Table 2: Perceptions of Cyber Security Issues

<table>
<thead>
<tr>
<th>Statement</th>
<th>(\bar{x})</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS issues fall within the domain of the CIO</td>
<td>4.85</td>
<td>4.0</td>
<td>5.0</td>
<td>.36</td>
<td>.13</td>
</tr>
<tr>
<td>Cyber security is an issue that must be dealt with</td>
<td>4.58</td>
<td>4.0</td>
<td>5.0</td>
<td>.49</td>
<td>.24</td>
</tr>
<tr>
<td>Targeted training should be provided to presidents</td>
<td>3.76</td>
<td>2.0</td>
<td>5.0</td>
<td>.70</td>
<td>.49</td>
</tr>
<tr>
<td>CS training should be provided on-demand, online</td>
<td>3.55</td>
<td>2.0</td>
<td>5.0</td>
<td>.86</td>
<td>.73</td>
</tr>
<tr>
<td>CS threatens the future of higher education</td>
<td>3.45</td>
<td>2.0</td>
<td>5.0</td>
<td>.89</td>
<td>.79</td>
</tr>
<tr>
<td>More training is needed for college leaders about CS</td>
<td>3.45</td>
<td>1.0</td>
<td>5.0</td>
<td>.89</td>
<td>.79</td>
</tr>
<tr>
<td>CS can be effectively managed by HIED systems</td>
<td>3.36</td>
<td>2.0</td>
<td>5.0</td>
<td>.98</td>
<td>.96</td>
</tr>
<tr>
<td>President have primary responsibility for CS</td>
<td>3.15</td>
<td>1.0</td>
<td>5.0</td>
<td>1.21</td>
<td>1.46</td>
</tr>
<tr>
<td>CS training should be coordinated by associations</td>
<td>2.94</td>
<td>1.0</td>
<td>5.0</td>
<td>.95</td>
<td>.91</td>
</tr>
</tbody>
</table>

Members of the sample were also asked to rate their level of agreement with a series of statements about the practice of cyber security on their campuses. These 9 statements were all developed based on both the emerging academic and professional literature on cyber security. On a 1-to-5 Likert-type scale (1=Strongly disagree progressing to 5=Strongly agree) respondents agreed most strongly that cyber security issues fall within the domain of the senior/Chief Information Officer \((\bar{x} = 4.85; \text{SD} .36)\), and that cyber security issues are indeed an important issue that must be dealt with by higher education institutions \((\bar{x} = 4.58; \text{SD} .49)\). These same respondents agreed the least strongly with having training for cyber security being coordinated by professional associations \((\bar{x} = 2.94; \text{SD} .95)\) and that the college president should have primary responsibility for cyber security \((\bar{x} = 3.15; \text{SD} 1.21)\).

**DISCUSSION**

These descriptive findings offer significant insights into how cyber security is viewed on campus. They generally point in the direction of understanding how important cyber security is, but also that the responsibility for such protections are delegated to a particular office on campus. Some of the discrepancy in the response as to who should have responsibility for cyber security may be in the nuanced perspective of how different colleges and universities are organized. For example, information systems and computing might be under business affairs or administrative operations at one university, and might be a direct report to the campus president at another institution. The clearest part of the response, though, is that the president, while responsible for all aspects of the institution and its operation, is seen as an individual who delegates responsibility for the cyber security operations to the most appropriate, perhaps knowledgeable, individual on staff.

Respondents reinforced their perspectives about who should be responsible for cyber security in their ratings of various issues. By agreeing most strongly with assigning cyber security to the CIO position, there was a reinforcement of who should be responsible within the campus structure for this work. There was also some ambivalence about where and how professional development training should occur, with moderate agreement with the included statements about the provision of this training, be it online or coordinated by professional associations. If professional associations, however, do not take the leadership of providing cyber security related training, there may be a lack of leadership in creating forward thinking training programs that bring higher education leaders into the continued conversation of protecting their campus’ data.
There is a lack of scholarly literature describing and inferring the major issues and response strategies for the cyber security of higher education. As a growing field, and as a growing concern for college administrators, there must be a concentrated and immediate strategic direction forged for how this research and literature are developed and shared. By creating a well-documented, reasoned, and logical approach to better understanding the multiple-dimensions to cyber security, the academy can become better prepared to face the growing assault on the big data that they protect.

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DEVELOPMENT OF ANDROID BASED CHEMICAL LEARNING MEDIA FOR HIGH SCHOOL STUDENTS

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Abstract
The aim of this research is to design and create chemical learning media on smartphones with an android application for high school students. The development model used in the research was research and development which adopted the phase from ADDIE. The research sample consisted of XI grade students of high school Yogyakarta. The instrument used in this study is the media quality assessment sheet. This study resulted in (a) averages for feasibility of the media on all indicators are 76% from media experts, 93% from material experts, 92% from teachers and 87% from students, and (b) android application in the form of chemistry on android can be used as a chemical learning media. With the increasingly rapid development of technology, this Android smartphone can be used as an alternative to the development of chemical learning media in schools.

Keyword: Android application, learning media, smartphone.

INTRODUCTION
The importance of chemical education in teacher professional development can support the use of technology significantly (Tondeur, Braak, & Ertmer, 2016). The lack of understanding of theoretical and pedagogical foundations causes teachers not to utilize learning technology optimally (Voogt & McKenney, 2016). Teachers are not only required to use technology, but can develop various media for learning innovation (Harris, Mishra, & Koehler, 2014). Technology-based learning can support student learning needs, so as to improve the quality of education (Baran, 2004). Therefore, the use of technology-based learning media is very important in education.

Using of digital chemistry learning media is an effort to create meaningful learning. Students prefer digital media rather than print media because the costs needed are low and easier to find information (Weisberg, 2011). Learning digital media is superior in terms of student metacognition than non-digital learning (Norman & Fornes, 2016). One of the digital media that can be used is cellphone or tablet (Adi, Yulianto, Irwan, & Endris, 2016). Digital chemistry learning media can be a new innovation in developing media.

Today, smartphones with Android operating systems are becoming a new trend in choosing software. The development of cellular phones can provide new breakthroughs in the field of education, so students can study anytime and anywhere (Al-Fahad, 2009). Students can be actively involved when using a smartphone (Gikas & Grant, 2013). Smartphones with an Android system can also be used as a media for student learning (Calimag & Mugel, 2014; Remón, Sebastián, Romero & Arauzo, 2017). The Android platform can facilitate students in authentic, interactive and creative learning (Zhao, Wu, & Chen, 2017). Instead, research shows that many students use smartphones to play games, explore social networking sites, and watch videos (Lepp & Barkley, 2015). Thus, an android smartphone can be used as needed.
To reduce android usage errors in learning, new learning media are needed. Learning media in the form of videos, images, and animations can improve students' learning abilities (Henderson, Selwyn & Aston, 2015). Games with online formative assessment can have a positive impact on student problem solving skills (Gikas & Grant, 2013). The development of android as a learning media can support the understanding of concepts and interest in student learning (Arista & Kuswanto, 2018). One way to develop media is to design and create chemical learning media for high school students through the android application. It is hoped that it can become an alternative learning media that is interesting and can be used by anyone, anytime and anywhere.

METHODS

Research Procedure
The type of research is research and development. This study refers to the ADDIE development model (Dick & Carey, 1996). The research begins with the analysis phase by means of preliminary studies, namely literature studies and field surveys. The second stage is to design the media and identify objectives based on preliminary studies that have been done before. Furthermore, developing instruments in the form of application android. Then test the android application experts, namely media experts and material experts. After that, make revisions according to the results of the validation of the experts. The next step, conducting trials is limited to 5 chemistry teachers. Then the product is implemented in the XI grade students of high school Yogyakarta. The final stage is analyzing and evaluating the media developed. Tabel 1 shows the development research design.

<table>
<thead>
<tr>
<th>Flowchart of Research Design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis</strong></td>
</tr>
<tr>
<td>Start</td>
</tr>
<tr>
<td><strong>Design</strong></td>
</tr>
<tr>
<td>Create Storyboard</td>
</tr>
<tr>
<td>Identification of purpose</td>
</tr>
<tr>
<td>Development</td>
</tr>
<tr>
<td>Development of learning</td>
</tr>
<tr>
<td>Instrument by experts</td>
</tr>
<tr>
<td>Limited Trial</td>
</tr>
<tr>
<td>Implementation</td>
</tr>
<tr>
<td>Product Trial</td>
</tr>
<tr>
<td>Evaluation</td>
</tr>
<tr>
<td>Analyze and evaluate the media developed</td>
</tr>
</tbody>
</table>

Tabel 1: Research Design
Data Collection
Data collection techniques using non-test methods. Data collection techniques use media quality assessment data. Media quality assessment data is used to evaluate the quality of instructional media on Android smartphone. The instrument of data collection is in the form of a media quality assessment sheet. The media assessment sheet instrument consists of 1) media expert validation sheet, 2) material expert validation sheet, 3) teacher assessment sheet, and 4) student assessment sheet. Table 2 shows the indicators of quality assessment of adapted media (Mulyanta, 2009; Hays, 2009).

Table 2: Media Quality Assessment Indicator

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Expert Media</th>
<th>Expert Content</th>
<th>Teacher</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ilustration</td>
<td>Ilustration</td>
<td>Ilustration</td>
<td>Ilustration</td>
<td>Ilustration</td>
</tr>
<tr>
<td>Operational Media</td>
<td>Concept</td>
<td>Concept</td>
<td>Understanding</td>
<td>Language</td>
</tr>
<tr>
<td>Technology Utilization</td>
<td>Language</td>
<td>Language</td>
<td>Operational Media</td>
<td>Technology Utilization</td>
</tr>
</tbody>
</table>

Statistical Analysis
Data obtained from this media development research is in the form of quantitative data. Quantitative data in the form of scores 1-5 were obtained from filling out the media quality assessment sheet.

Table 3: Media Quality Assessment Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>5</td>
</tr>
<tr>
<td>Good</td>
<td>4</td>
</tr>
<tr>
<td>Enough</td>
<td>3</td>
</tr>
<tr>
<td>Less</td>
<td>2</td>
</tr>
<tr>
<td>Very Less</td>
<td>1</td>
</tr>
</tbody>
</table>

After obtaining an average score, it is included in table 4 which shows the ideal assessment criteria for knowing the quality of android in chemical learning media (Widoyoko, 2011).

Table 4: Media Quality Criteria

<table>
<thead>
<tr>
<th>No</th>
<th>Score Range</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$\bar{x} &gt; \bar{x}_i + 1,8 \text{ SB}_i$</td>
<td>Excellent</td>
</tr>
<tr>
<td>2</td>
<td>$\bar{x}_i + 0,6 \text{ SB}_i &lt; \bar{x} &lt; \bar{x}_i + 1,8 \text{ SB}_i$</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>$\bar{x}_i - 0,6 \text{ SB}_i &lt; \bar{x} &lt; \bar{x}_i + 0,6 \text{ SB}_i$</td>
<td>Fair</td>
</tr>
<tr>
<td>4</td>
<td>$\bar{x}_i - 1,8 \text{ SB}_i &lt; \bar{x} &lt; \bar{x}_i - 0,6 \text{ SB}_i$</td>
<td>Poor</td>
</tr>
<tr>
<td>5</td>
<td>$\bar{x} &lt; \bar{x}_i - 1,8 \text{ SB}_i$</td>
<td>Very Poor</td>
</tr>
</tbody>
</table>

Note: $\bar{x} = \frac{1}{2}$ (ideal max score + ideal min score); $\text{SB}_i = \frac{1}{2}$ (ideal max score + ideal min score)
RESULTS

Media validation is carried out by media experts to test whether media is suitable for use in chemistry learning. Indicators include illustration indicators, media operational indicators, and technology utilization indicators. The assessment sheet for media experts consists of 11 questions. Scale scores 1-5 and are assessed with a rating scale of 0% - 100% which means very less to very good.

Graph 1 shows the ideal percentage of the illustration indicator is 73%, in the media operational indicator is 73%, and the indicator of technology utilization is 90%. The percentage of the total average of all indicators shows that the android application is good. In other words, an android application can be used as a learning media.

Material validation is done to test whether the concepts in the android application are feasible and easy for students to understand. The concept validation is carried out by chemical concept experts. The concept validation instrument consists of 11 statements which include illustration indicator, concept accuracy indicator, and language indicator. Figure 1 shows the ideal percentage of concept experts on the illustration indicator by 80%, on the indicator concept accuracy is 95%, and the language indicator is 90%. Data obtained from concept experts is shown in figure 1 the percentage of the total of all indicators is 88%. This shows that the android application is very good and serves as a learning media.

After revision, limited trials were conducted for chemistry teachers. Limited trials are used to find out whether the application can be used in the learning process. There are 19 statements given to the teacher to evaluate the media developed. Limited testing is carried out by 5 chemistry teachers. Assessment indicators consist of accuracy concept, language, illustrations, media operations, technology utilization. Based on Graph 2, the ideal percentage of the accuracy concept indicator is 93%, on the language indicator is 92%, the illustration indicator is 93%, the media operation indicator is 92%, and the technology utilization indicator is 94%. The total percentage of all aspects is equal to 93% which shows that this Android is very well used as a chemical learning media.

After a limited trial, the implementation was carried out by testing android products in chemistry learning media by 25 eleventh grade students. During the trial students filled out a media quality assessment sheet consisting of 10 statements, including indicators of understanding concepts, illustration indicators, language indicators and media operational indicators. Data obtained from student assessment sheets on media are shown in graph 3. The ideal percentage of concept understanding indicators is 85%, illustration indicators are 88%, language indicators are 85%, and operational media indicators are 90%. The total percentage of all indicators is 87% which shows that this android is very well used as a chemical learning media.
DISCUSSION AND CONCLUSION

In this study produced "Chemistry On Android" in the file format Android Application Package (.apk). This media is present in Indonesian, can only be operated on cellphones with an Android system, the material presented is a buffer solution and quizzes are presented to train students’ problem solving skills which are equipped with interesting images or animations. Figure 1 shows an explanation of how to make a buffer solution. Attractive background, writing, images and animation can distract students. This is consistent with the statement that learning media in the form of videos, images, and animations can improve students’ learning abilities (Henderson, Selwyn, & Aston, 2015). Other research findings show that there are significant differences when students are involved in learning that uses video as a learning medium (Annetta, Minogue, Holmes & Cheng, 2008; Brame, 2016).

Quiz presented in Figure 2 can be used to test students’ understanding. In developing this media, quizzes are presented with scores and working time. The score is used to find out how many quiz we can do. Statements about games with online formative assessment can have a positive impact on students' problem solving skills (Gikas & Grant, 2013). Evidenced by giving time to work on the quiz.
“chemistry on android” is given a time limit, so that students are trained to think quickly and precisely in working on the problem or solving the problem. Other research findings suggest that constructivist learning based on games can provide new knowledge, so students feel happy (Chan, et al., 2017). Based on several studies, it can be concluded that the learning media presented with the game will provide new experiences for students.

Figure 1: Short Explanation

Figure 2: Quiz

Figure 3 that students pay close attention to the android used as a learning media, this is in accordance with the statement of smartphones with the android system can be used as a medium for
student learning (Calimag, Mugel, Conde, et al, 2014; Remón, Sebastián, Romero, & Arauzo, 2017). With the development of this Android, understanding students' concepts is increasing. Data from media assessment shows that 85% of students understand the concept of buffer solution with good assessment criteria. This means that students easily accept android as an innovative and creative learning media, so they can support students' conceptual understanding. Technology-based learning can support student learning needs, so as to improve the quality of education (Baran, 2014). In practice the researcher made a small group of 4-5 students to try the android media and fill out the assessment sheet that had been provided. Based on the suggestions and comments given by students, it was stated that the video needed to be added with the discussion, added interesting games, pretty good animation, and the audio presented made the students the spirit of learning. The development of android media provided to students has not been fully successful in improving students' understanding. This needs to be a consideration in developing innovative and creative learning media.

Figure 3: Students use android media as a learning media

The product produced in this study is "Chemistry On Android". Android applications in smartphones can be used as learning media for students anywhere and anytime. The research findings state that an android application in the form of a simulation laboratory can be used as a learning medium for high school students (Astra, Nasbey, & Nugraha, 2015). However, not all learning materials and activities use cellular devices. So it is necessary to take steps to determine the learning media that is in accordance with the material presented. In further research, it is expected to be more varied in developing learning media in order to achieve better results. Research can be done using other research instruments. Discussions with relevant parties so that the media produced can get suggestions and comments that are in line with expectations.
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STUDENTS’ LEARNING OUTCOME IN CHEMISTRY LEARNING USING ANDROID APPLICATION

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Abstract
The use of technology-based media on android devices has begun to be used in learning widely. The use of technology-based media on android devices has begun to be used in learning widely. This research aimed to develop an android-based learning media and to find out the effect of learning media to improve learning outcome. This research is Research & Development (R&D) which used the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The instruments of data collection consisted of media validation sheet and learning outcome test. The result obtained in this research was that learning media on the subject matter of acid and base. Students’ learning outcome data were analyzed by ANOVA. The result showed that the media feasibility assessment were categorized as good by material experts, media experts, peer reviewers and chemistry teachers and students in small-scale trials. ANOVA test showed that the use of android learning media in chemistry learning can affect students’ learning outcome.

Keywords: Android application, learning media, learning outcome, chemistry learning.

INTRODUCTION
The advancements of technological in the 21st century have an impact on all aspects of life, including in education (Qi, 2018). The development of this technology requires innovation in the use of technology in learning (Özdener & Demirci, 2019). So that the teachers are expected to improve the quality of learning by utilizing technology in learning according to the 2013 curriculum. Based on the facts in the field, the condition of education in Indonesia still does not utilize technology during the learning process. Research conducted by Rivalina (2014) shows that some teachers have problems in applying technology-based learning. Obstacles encountered include the lack of mastery of technology possessed by teachers, inadequate school facilities, full teacher teaching hours in schools, and inadequate internet connections. Therefore, teachers must prepare themselves to face challenges in learning along with technological developments.

The use of this technology can be applied through the use of technology-based learning media during the learning process. The use of technology as a learning media has a positive impact and very effectively applied in learning (Adnan, Prasetyo, & Nuriman, 2017). Technology-based learning media can also improve students’ learning outcomes (Chuang, 2014). Android-based smartphone is one of the technologies that can be used in the learning (Calimag, Mugel, Conde, & Aquino, 2014). Android-based smartphone is used as a learning media that can support the learning process of students (Nurohmah, Wahyuadin, Partono, 2014). Android-based smartphones also provide facilities for students to access subject matters and to learn anytime and anywhere (González, et al., 2015). The existence of these mobile devices makes the learning process more interesting and fun. It shows that mobile devices that are used as learning media can influence the learning process (Sung, Chang, & Liu, 2016).
The use of android learning media to support the learning process is able to make students more interested in following the learning process. Interactive media, easily accessible and fun are characteristics of the android learning media (Hanafi & Samsudin, 2012). The use of android applications in chemistry learning provides very satisfying result. The use of android application in chemistry learning is able to make improvements of students' cognitive learning outcome and learning motivation (Putra, Wijayati & Mahatmanti, 2017). However, research conducted by Yusrizal, Safiah, Nurhaidah (2017) states that there are still teachers who are less able to utilize technology-based learning media and still use conventional media found in the surrounding environment. The learning media used are Student Worksheets and chemical text books for high school. The use of LCD in the learning process is only a power point. The use of videos or illustrations of learning about chemistry and teaching aids as supporting chemical learning has never been applied in the learning process by teachers. So that guidance is needed in utilizing technology-based learning media evenly in various regions (Hanafi & Samsudin, 2012).

Chemical learning is a learning process about chemical material that some students have difficulty understanding. The subject material of acid and base is one of the subject matter of chemistry that has to be studied by students in middle school (Wilson, 1998). It is one of the basic concepts to understand the subject matter of the buffer solution and solubility (Jauhariningsih, 2017). It explains about the definition of acid and base, the strength of acid and base, pH and pOH and the reaction of acid and base (Ültay & Calik, 2016). Most acid and base subject matter includes a number of abstract concepts. It is difficult for students to understand the subject material of acid and base (Özmen, Demircioğlu, & Coll, 2009). Students' difficulties in learning the subject matter of acid and base have affected on students’ learning outcome.

Learning outcomes are the results obtained from a learning and teaching interaction between students and teachers (Dimyati & Mudjiono, 2013). Student learning outcomes are the main indicators in evaluating the quality of learning. Based on the data of National Examination result of Senior High School in 2017/2018 academic year in Yogyakarta, Indonesia from PAMER application shows that students’ learning outcome on acid and base subject matter obtained an average score of 45.18. The low student learning outcomes need an effective solution to optimize students’ understanding and motivate students to study chemical material. One way is to make learning media, so that chemical material can be simplified and concretized with the help of technology-based learning media or android media (Yektyastuti & Ikhsan, 2016). This research was conducted to develop android-based learning media on acidic and basic material and to know the learning outcomes of students.

METHOD

Research Design
The research is Research and Development (R & D). The development model used refers to the development model of ADDIE which consists of five stages: analysis, design, development, implementation, and evaluation.

Procedure and Participants
The procedure for developing research uses the ADDIE development model which consists of five steps: collecting data on needs analysis through observing the learning process and analyzing the curriculum and syllabus (Analysis); media planning by making a storyboard and flowchart (Design); manufacturing android learning media and media validation to the one material expert, one media expert, three peer reviewers, three chemistry teachers. Furthermore, a small-scale trial was conducted on 32 students of XII grade State High School 5 Yogyakarta (Development); field trials for students (Implementation); evaluation of media assessment and students’ learning outcome (Evaluation). The research subjects were students of grade XI in State High School 5 Yogyakarta (Yogyakarta, Indonesia): 65 students of grade XI were selected and divided into two groups. First half as an experimental class and the second half as a control class.
Data Collection

The data collected in this study is the feasibility of android media and students’ learning outcome. Feasibility assessment of android media using the validation sheet of modified media from Crozat, Hû, & Trigano (1999); Nesbit, Belfer, & Vargo (2002), and Botha (1990). The media validation sheet was developed using a 1-5 Likert scale. The media validation sheet by material experts consists of material aspects and learning aspects. Media validation by media experts consists of audio and visual aspects as well as aspects of software engineering. The media feasibility validation sheet by the teacher and peer reviewer consists of visual and audio aspects, software engineering, learning, and material.

The data of learning outcome were obtained from the test of learning outcome. The test of learning outcome consisted of 30 multiple choice questions about the subject matter of acid and base. The test was used as a post-test question which was given after learning by using android-based learning media. Validation of the contents of the test of learning outcome was carried out by asking for expert judgment of the instrument which included aspects of substance, constructs, and language. While the empirical validation was tested on 219 students. Empirical validation data was analyzed using the QUEST program. Based on the results of the validity analysis there are 30 questions that are fit with the QUEST program. This means that there are 30 multiple choice questions that are used as student learning outcome measurement instruments. In addition, the results of the analysis show a reliability value of 0.96.

Data Analysis

The data were analyzed by calculating the average score for each aspect of the assessment. The average score was compared with the category of media quality (Widyoyoko, 2011) described in Table 1. ANOVA test with prerequisite test (normality and homogeneity) was used to analyze the learning outcome data of students in the experimental class and control class.

Table 1: Quality of Validation Media

<table>
<thead>
<tr>
<th>Score Range (i)</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X &gt; \bar{X} + 1,8 \text{ Sbi}$</td>
<td>Excellent</td>
</tr>
<tr>
<td>$\bar{X} + 0,60 \text{ Sbi} &lt; X \leq \bar{X} + 1,80 \text{ Sbi}$</td>
<td>Good</td>
</tr>
<tr>
<td>$\bar{X} - 0,60 \text{ Sbi} &lt; X \leq \bar{X} + 0,60 \text{ Sbi}$</td>
<td>Fair</td>
</tr>
<tr>
<td>$\bar{X} - 1,80 \text{ Sbi} &lt; X \leq \bar{X} - 0,60 \text{ Sbi}$</td>
<td>Poor</td>
</tr>
<tr>
<td>max score + ideal min score)</td>
<td></td>
</tr>
</tbody>
</table>

FINDINGS

The development of android-based chemical learning media on acidic and basic material is arranged in color and image display and sound using supporting applications Construct 2 and Photoshop. The software product was in the form of file with an extension of Android Package (.apk) that could be opened in android device. The android application developed can be used as one of the learning media innovations for class XI students in accordance with the 2013 curriculum. Android media consisted of competency, learning objectives, and learning indicators; explanation of the meaning of acid and base, acid and base indicators, and pH of the solution; some exercises that were packaged in the form of games with four levels to improve learning outcome; and information about android learning media developers. The display of android learning media can be seen in Figures 1, 2, 3 and 4.
Android-based chemistry learning media which was developed was validated toward one material expert and one media expert. The validation result of material expert and media expert can be seen in Table 2.
Based on Table 2, the validation result of the material expert, the learning aspect obtained a percentage of 96% with a score of 24; aspects of learning material obtained a percentage of 80% with a score of 32. The validation result of the material experts including the excellent category. The validation result of the media expert showed that the audio visual aspect obtained a percentage of 78.18% with a score of 43 and software engineering aspects at 85% with a score of 17. The validation result of the media expert showed that all aspects of android-based chemistry learning media were categorized as Good.

Media feasibility assessment is also carried out by peer reviewer and chemistry teachers. The media feasibility assessment of peer reviewer and chemistry teacher can be seen in Table 3.

Based on Table 3, the validation result of peer reviewer showed that all aspects of android-based chemistry learning media were categorized as Excellent with a total score obtained 130.20, which was 93% of the maximum score. The validation result by chemistry teachers showed that all aspects were categorized as Excellent with a total score of 117.75, which was 84.11% from the maximum score. Android-based learning media were also tested in a small-scale trials by 32 students of grade XII high school. The results of trials to students can be seen in Table 4. Based on the results of the assessment of media readability by students in the learning aspects obtained an average score of 17.13 with a percentage of 85.65% and the display aspect of the media obtained a score of 30.38 with a percentage of 86.8%. Based on the result of validation by material experts, media experts, peer reviewers and chemistry teachers, it was shown that android-based chemistry learning media on the subject material of acid and base was considered as appropriate to be used in the learning process of chemistry in senior high school.

Furthermore, it was carried out field test to find out media’s impact toward students’ learning outcomes by using quasi-experimental with post-test only design. The sample of this research was selected randomly on two classes, those were experiment class (by using android-based chemistry learning media) and control class (by using conventional media that was used to be applied in the school). The results of average score of post-test in the experiment class and control class can be seen in Figure 5.
Based on Figure 5, it shows that cognitive learning outcome in the experimental class had an average score (78). It is higher than the control class (68.69). It showed that android-based chemistry learning media was able to improve students' cognitive learning outcome. The statistical test which was used to find out media’s impact toward students’ learning outcomes was ANOVA test, with the program of SPSS 24. ANOVA would be applied if the prerequisite test (normality and homogeneity) was fulfilled. The normality of the distribution of the data of students' learning outcomes in the experimental group and the control group was tested by using the Shapiro-Wilk Test. Homogeneity of variance data was tested by using Levene's Test. The results of the analysis of normality tests can be seen in Table 5. Based on Table 5, score data on student learning outcomes from the experimental class and the control class are normally distributed. This is indicated by the significance value of the normality test > 0.05 which is equal to 0.477 (experimental class) and 0.195 (control class).

Table 5: Normality Test Result

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Sig. of Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>33</td>
<td>0.477</td>
</tr>
<tr>
<td>Control</td>
<td>32</td>
<td>0.195</td>
</tr>
</tbody>
</table>

The results of the homogeneity tests can be seen in Table 6.

Table 6: Homogeneity Test Result

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levene Statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning outcome</td>
<td>Based on Mean</td>
<td>0.550</td>
</tr>
</tbody>
</table>

Based on Table 6, the variance of data homogeneity is homogeneous. This is evidenced by the significance value of the homogeneity test > 0.05 which is 0.461. After the prerequisite test was fulfilled, the ANOVA test was performed. The result of the ANOVA test can be seen in Table 7.
Table 7: ANOVA Test Result

<table>
<thead>
<tr>
<th></th>
<th>Sum of Square</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Group</td>
<td>1521.089</td>
<td>1</td>
<td>1521.089</td>
<td>13.06</td>
<td>0.001</td>
</tr>
<tr>
<td>Within Group</td>
<td>7362.511</td>
<td>63</td>
<td>116.865</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8883.600</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 7, the significance value of the One Way ANOVA test is 0.001 < 0.05 which indicates that there are differences in cognitive learning outcomes between students in the experimental class and the control class. It shows that the android-based chemistry learning media developed was able to improve students’ learning outcome.

**DISCUSSION AND CONCLUSION**

The development research which has been carried out produced media product, in the form of android-based chemistry learning media. The media has been validated by media experts, material experts, chemistry teachers, and peer reviewers. Based on the results of the assessment, it showed that the android-based chemistry learning media developed could be used as one of the learning media in the subject matter of acid and base in XI grade of Senior High School.

The use of technology-based learning media can be used to attract students' attention in learning so that they were more interested in following the learning process (Lesmono, Bachtiar, Naryani, & Muzdalifah, 2018). In addition, to support the 21st century learning, the use of technology has an important role in the learning process. Teachers are required to master technology and apply it in the learning process, either inside the classroom or outside the classroom (Franklin, 2011). For the teacher, the use of technology in learning makes it easier to deliver learning materials so that technology-based learning media are able to build and train students to study subject materials deeply and provide the meaningful learning (Leow & Neo, 2014).

Android-based learning media, as an effective learning media provide opportunities for students to access subject materials anywhere and anytime (Chung, 2019). So that, for students it makes learning more flexible and provides positive learning experience. In addition, it also can make the learning atmosphere more interactive and fun so that they can build their own knowledge and increase their conceptual understanding. According to the research which was conducted by Lubis & Ikhsan (2015) about the development of android-based chemistry learning media, it showed that the learning outcomes and the motivation of students that used android learning media were higher than students who used conventional learning. In addition, research conducted by Putra, Wijayati, & Mahatmanti (2017) showed that android-based learning media had positive impact on learning and increased students’ learning outcomes.

The android-based learning media developed in this research contained menu of basic competencies and learning objectives to be achieved in the subject materials of acid and base, summaries of acid and base subject material, and exercises which were packaged in the form of game. Providing games in learning is able to give students a pleasure in learning and influence students’ learning outcomes (Jabbour, 2013). Android learning media, with game is a learning media which was useful to provide a fun learning atmosphere, easy to be understood and easy to be accessed for students (Cahyana, Parisiowati, Savitri, & Hasyrin, 2017).

Learning outcome is one of the main indicators in evaluating the learning process which has been carried out. It is the result obtained by students through the learning process between teachers and students (Dimyati & Mudjiono, 2013). It had an important role to find out how far students' understanding toward subject materials was. Students with high learning outcomes tended to have a high understanding of the subject materials. In this research, by using android media, students in the experimental class continued to try to complete the tasks presented in the android media and they...
were motivated to take part in learning. This was what caused them to have higher learning outcomes. In addition, they could also access android-based chemistry learning media anywhere and anytime without the limitations of space and time. They could repeat the subject materials which have not been understood through android learning media so that they could increase their understanding toward subject materials and their learning outcomes (Cahyana, Paristiowati, Savitri, & Hasyrin, 2017). Thus, an android-based learning media could be used as an effective learning media in the learning process either inside or outside the classroom (Lin, Chen & Liu, 2017). The use of appropriate learning media in the learning process would help students in receiving learning materials. So that the teacher had to be able to improve the quality of learning supported by various types of media (Isnaini, Himawanto, & Yusuf, 2017). For educators, the use of information technology provided opportunities to create technology-based chemistry learning media in supporting the learning process.

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PARADIGMS IN GUIDING MANAGEMENT APPROACHES AND THEORIES: CLASSICAL, NEOCLASSICAL, MODERN AND POSTMODERN THEORIES

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Abstract
Dynamic human cultural evolution along with social, economic, political and technological development have required organization scientists’ constant effort to formulate various approaches and theories in purpose of satisfying the demand of management realm. So does this article, its objective is to clarify the ways in which social paradigms, namely functionalist, interpretivist, radical structuralist and radical humanist paradigms, to guide the formulation of the management approaches and theories through influencing the assumptions of man in management; consequentially, under the umbrella of the four paradigms’ ideologies, those assumptions generate the approaches and theories respectively. Rationally, the concept of man possesses the logical explanation on the natural motive as driving force behind human behaviour. Finally, it was observed that these paradigms guided the management approaches or theories very logically with scientific systematic procedures. Finally, as implication, these paradigms can be applied to set up the theories or approaches directly by excluding the concept of man. Broadly, these paradigms can play active philosophical roles effectively in directing in several aspects of social theories, not only management ones.

Keywords: Approach, man, management, paradigm, theory.

INTRODUCTION

Social paradigms have been used for different purposes serving different benefits in social affairs depending on their consistent assumptions. Researchers have applied paradigms to guide not only researches, but also to create new research method or strategies (Gunbayi & Sorm, 2018). For sociologists, they have counted on social paradigms to illustrate social phenomena and to formulate models, theories, analytical tools and various social approaches. In management field, paradigm has also provided frameworks for the mainstream of management practice by directing management scholars, managers, decision makers, and policy makers to orient or to clarify their ideas, activities, vision, strategies, and to develop tools for doing assessment and evaluation. Historically and temporarily, management and administration discipline have been interrelated academically, and practically, have been used interchangeably. Whenever we make a historical view on the administration, the management is automatically included. Thus, the description below is the summary of public administration and management evolution.

Henry (1975) divides a nexus of development of public administration into five phases by putting a central focus on focus and locus in his analysis. The first is the stage of politics/administration dichotomy, traced back from 1900 to 1926, which expounded the separation of politics and administration. At this stage, he builds on three main achievements. Basically, he depends on Goodnow’s seminal work on Politics and Administration in 1900. Goodnow posits that government has two primary functions: politics and administration. The former is about the policies or the expressions of the state will while the latter is dealing with the execution of those policies. Then, the recognition of the field drew much more attention among the social scientists through a report made by the Committee on Instruction in the American Political Science Association in 1914 which put special
emphasis on training citizenship and professional preparations for the government position. Gradually, it became a significant subfield of political science. Until 1920s, administration was transformed from the politic subarea into academic legacy with the publication of the *Introduction to the Study of Administration*, written by Leonard D. White in 1926.

The second phase is the principle of administration from 1927 to 1937 which was relied on a crucial book on *Principle of Public Administration*, written by F. W. Willoughby ands published in 1927. It is the second main turning point of administration after White’s accomplishment that pushed administration field to be more mature. The administrators’ task at this stage was clearer indicated. For Henry (1975), the Public administrationists were in high demand during the 1930s and early 1940s for their managerial knowledge, courted by the locus of industry and government bureaucracy. Noticeably, public administration reached to its climax in 1937 with the publication of Luther H. Gulick and Lyndall Urwick's Papers on the *Science of Administration*. At this point, focus was favored over locus. In terms of the third stage, it is called public administration as political science from 1950 to 1970. Even though it had been endeavoured to gain independent from political science, public administration was located in the same department as political science because a renewed definition of locus-the governmental bureaucracy, but corresponding loss of focus. In 1962, administration was excluded from political sciences. However, it disappeared again in 1967 due to lack of interest from political scientists.

Additionally, the fourth phase is public administration as administrative science from 1956 to 1970. Because of lack of attention from political scientists, public administrationists started finding alternative ways. Thus, administrative science was born again. However, it put most emphasises on focus by ignoring locus. At this stage, it provides techniques that need expertise and specialization, but where expertise should be deployed is not identified (Henry,1975). Fortunately, in 1960s, organization development rose rapidly as specialty of administrative science. Due to including social psychology in the study of organization development, the new generation of public administrators alter their research interest to public bureaucracies in the framework of administrative science. As implication, democratic value was considered, normative concern was further discussed, and intellectual rigor and scientific methodologies were applied. The final stage is public administration as public administration from 1970 to present. At this stage, public administration became more and more autonomous. The students enrolled in public administration increased rapidly from 1971 to 1972. Remarkably, locus increased considerably. The functional units of public administration were separated, and fast growth of school of public administration spread widely.

Regarding progression of management thoughts, in *the Evolution of Management Thought*, Wren and Bedeian (2009) claim the dynamic changes of management thought evolve around three facets of the culture because, according to them, managers are affected by their cultural environment, and the ways in which they allocate and utilize resources have shifted within the changing views about economic, social, political institutions and technology. Precisely, economic facet is the relationship between human and resources. The resources may be created by human or nature such as land, buildings, raw materials, semi-finished products, tools, and equipment or other tangible objects used by people and organizations, and social facet focuses on the relationship between people and people. These affect the ways of theoretical development. Political facet is the relation of the individuals to the state, including the legal and political arrangements for the establishment of social order and for the protection of life and property. The last is that technology is the art and applied science of making tools and equipment. Therefore, these facets are also tools for investigating the development of management though, and show how the management idea develops.

Practically in management philosophy, the theories have developed into four phases. First, classical theories which includes scientific management of Taylorism, Bureaucracy, Fayolism. These theories hyphenise that human is passive and economic oriented, so strict control is the only solution. Second stage of development derives from the critiques of the classical ones. In order to fulfil the world of management needs, the neoclassical theories were founded under the influence the Hawthorne’s
experiment which explored the work effectiveness and productivity. The results revealed that the economic incentive does not determine work productivity, but social needs is the catalyst. The third phase has been called modern theories, including system approach, career management, human resource etc. These management theories were created upon criticizing the idea of strict control and social relation as the effective strategies for improving work productivity. Based on their view, self-actualizing is the top demand for which employees necessarily work. These theories believe that, to obtain employees’ loyalty and productivity, the managers should provide sufficient highest needs of human nature such as freedom and empowerment or autonomy. The last stage is post-modern theories, namely learning organization, total quality management, theory Z etc. These were built upon the assumption of complex man which assumes that man is a complex being. All human needs from the basic to the highest one are important.

The objective of the article is to clarify the ways in which social paradigms; namely functionalist, interpretivist, radical structuralist and radical humanist paradigms to guide the formulation of the management theories and approach such as classical, neo-classical, modern and post-modern management theories through directly influencing the assumptions of man in management.

Table 1: Paradigms in guiding management theories

<table>
<thead>
<tr>
<th>Paradigms</th>
<th>Concept of Man</th>
<th>Management Theories</th>
<th>Division of Theories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical structuralist</td>
<td>Homo economicus man</td>
<td>Bureaucracy, Fayolism, System approach (functionalist), Taylorism, Theory X</td>
<td>Classical</td>
</tr>
<tr>
<td>Functionalist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radical structuralist</td>
<td>Social man</td>
<td>Hawthorne experiments, Career management, Human resource management, Theory Y, System approach (interpretivist)</td>
<td>Neo-classical</td>
</tr>
<tr>
<td>Functionalist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretivist</td>
<td>Self-actualizing man</td>
<td></td>
<td>Modern</td>
</tr>
<tr>
<td>Radical humanist</td>
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<td></td>
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</tr>
<tr>
<td>Interpretivist</td>
<td>Complex</td>
<td>Learning organization, Theory Z, Total quality management</td>
<td>Postmodern</td>
</tr>
<tr>
<td>Functionalist</td>
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<tr>
<td>Interpretivist</td>
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<tr>
<td>Radical humanist</td>
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Generally, the paradigm frames the way in which we view the world. When any paradigmatic ideology is located in your mind, it will cause major impact upon our point of view, and alter the way we are seeing the world. This is the reason that different people look into the same thing, but see it differently. Literally, our beliefs exerts a dominant effect on our thinking of, valuing or judging something. So do functionalist, interpretive, radical structuralist paradigms, and radical humanist paradigm. If management theorist’s tendency has been on the side of functionalist or radical structuralist ideology, they would prefer strict and directive control as the mean to manage or to lead the organization, for example, scientific management of Frederick W. Taylor, Fayolism and Bureaucracy of Mark Weber. However, if they are in the sides of the interpretive and radical humanist paradigms, they will be democratic in style of manageent. For example, Abrahan Harold Maslow, Edgar Henry Schein, Eton Mayo.

Theoretically, the functionalist paradigm is in the dimension of sociology of regulation which use objectivist approach as an analytical tool that tends to be realist ontology, positivist epistemology, determinist in human nature and nomothetic methodology to analyse the status quo, social order, consensus, social integration, solidarity, need satisfaction and actuality of social affair (Burrell &Morgan, 1979, Sorm & Gunbayi, 2016). It is a perspective which is highly pragmatic in orientation,
concerned to understand society in a way which generates knowledge which can be put to use. It is often a problem-orientated approach, concerning with practical solutions to practical problems. It is usually firmly committed to a philosophy of social engineering as a basis of social change and emphasizes the importance of understanding order, equilibrium and stability in society and the way in which these can be maintained. Shortly, it puts central focus upon the concrete regulation and control of social affairs.

In terms of radical structuralist or radical functionalist paradigm, it applies the same approach to the functionalist’s, but practically, gives the rational explanation on radical change, emancipation, and potentiality, in its analysis focusing on structural conflict, modes of domination, contradiction and deprivation. The radical structuralist paradigm’s frame of reference lays emphasis upon the changes of structural relationship in realistic social world. This radical change transform the very nature of contemporary society, and they provide explanations upon the interrelationship in social formation. To examine the causes leading to radically changing, some radical structuralist theorists have utilized the power relation analysis as a tool to illustrate the radical changes while others underscore the deep-seated internal contradictions as a mean to change. However, commonly, they applied political conflict and economic crisis as lens to explain the transformation of existing social arrangement (Burrell & Morgan, 1979, Sorm & Gunbayi, 2016).

The interpretive paradigm is a social regulation philosophy, using subjective approach as an analytical lens. The subject area of analysis is stressed upon the same to those of functionalist paradigm, namely the status quo, social order, consensus, social integration and cohesion, solidarity and actuality that intends to be nominalist, anti-positivist, voluntarist and ideographic. Its assumption is that, to understand the world, we must be aware of the fundamental nature of social world at the level of subjective experience. It provides rational explanation on the realm of individual consciousness and subjectivity or intersubjectivity, seeing the social world as emergent social process, created by the individuals concerned, and the world of human affair is cohesive, ordered, and integrated. To find social reality, we should scrutinize in-depth of human consciousness and subjectivity in order to seek for the fundamental meanings that underscore in social life (Burrell & Morgan, 1979, Sorm & Gunbayi, 2016).

In respect of the radical humanist paradigm, it is in the dimension of radical change which lays emphasises upon radical change, modes of domination, emancipation, deprivation and potentiality. It uses the same approaches to those of the interpretive paradigm that become nominalist, anti-positivist, voluntarist and ideographic. The humanist paradigm’s frame of reference beholds the society to be transformed the limitation of existing social arrangement, concerning with release from the constraints within which are existing social arrangements place upon human development. Its entire assumption is based on the premise that there will be revolution or transformation through consciousness that is the means through which society will change with people throwing off the chains of psychic oppression which ties them into alienating modes of life. It is a belief in the ability to change society through changing consciousness by changing the way people think, see, and understand of the world. It tries to bring about a new world view, a new paradigm which allows people individually in conjunction with others to reorganize their experiences (Burrell & Morgan, 1979, Sorm & Gunbayi, 2016).

Strategically, based on Burrell and Morgan (1979), applying the four paradigms to guide the management theories is a powerful method for scientific practice in not only management field, but also in most of social sciences’ approaches. There are systematic procedures for utilizing them in this matter. Firstly, we should be clear about the objectives we intend to explain the phenomena or to guide the practitioners. About what do we want to explain or which direction we want to lead the practitioners? These subject concerns can be divided into two main categories, sociology of regulation and radical change. The former expounds the status quo, social order, consensus, social integration and cohesion, need satisfaction, solidarity and actuality whereas the latter can be radical change, structural conflict, modes of domination, contradiction, emancipation, deprivation and potentiality.
Secondly, we should examine the approaches with which we attempt to employ, subjectivist or objectivist. If we use subjectivist approach, we should look more in-depth. Do we use nominalist ontology, anti-positivist epistemology, voluntarist as the assumption of human nature and ideographic methodology? In contrary, if they deploy objectivist approach. Do they use realist ontology, positivist epistemology, determinist assumption of human nature and nomothetic methodology?

**Homo Economicus Man in Guiding Classical Theories**

The view of man in management is not a new concept in organizational science. It has been hotly debated by many social scientists, psychologists and theologists for many decades. For Karl Marx, man is not a blank sheet by nature, but a recognizable and ascertainable existence, and can be defined not only biologically, anatomically and physiologically, but also psychologically; furthermore, he adds the man can survive as long as he is productive, but he is dead if he is not productive (Fromm, 2004). Based on him, man can be studied and be understandable, so he can be led, and be trained skills to be more productive. There are many models explaining about the nature of human being. In management science, the concept of man was under the significant influence of three hypotheses; namely, the rabble or economic man, social man and complex man hypothesis (Dayal, 1981). In addition, one more model, called self-actualizing man, was built upon the self-actualized assumption of Goldstein (1995). Rabble hypothesis has been used synonymously with homo economicus or (rational) economic, tool or machine man which assists us to explore more deep aspect of man analysis in organization. Definitely, based on David Ricardo, Dayal (1981) views that the main features of raddle hypothesis rests originally on two assumptions about nature of man. Firstly, the man is unorganized and works primarily for his self-interest. Secondly, providing him adequate incentive, he could do what the manager wants him to do.

Thus, based on Rabble hypothesis, the man is idle in nature. He needs something done for him, and is passive for his activities which cannot make choice by himself. As Schein view homo economicus man as being lazy, passive and unwilling to take responsibilities (Dzimbiri, 2009). Similarly, Agarwal (1982) also mentions the theoretical foundations of rational-economic man as follows:

- Economic gain is the primary source of man motivation. So, he does everything in order to maximize it.
- The man is passive to be manipulate and controlled by the organization because the organization controls the economy.
- The man has irrational feelings.

Drawing from the assumptions above, Beenerjee (1995) establishes implications for organization management design:

- Organization design should be aimed at neutralizing and controlling man’s irrational feelings by inputting economic incentive and other benefits.
- The system of authority for rewards and penalties should be created.
- The employees are expected to obey the holders of position power.
- Job should be designed in terms of efficiency and economy.
- Incentive budget should be planned.
- To promote productivity, individual bonus should be included.

In management context, the work of workmen have to be arranged to serve the goals of the organization either by coercion or extra incentive. His work should be planned and directed by management superiors, and the tasks should be guided by a clear instruction, describing the roles and responsibilities he will conduct (Dayal, 1981). Whenever he accomplishes his job well, he shall receive additional generous bonus.

Philosophically, the functionalist and radical structuralist paradigms affects perspective of homo economicus man which paves the way for stimulating various classical management theories. More
specifically, the functionalist and radical structuralist paradigm work as a strong philosophical background leading our standpoint on the assumptions of human nature while homo economicus plays a key role as a platform for orienting the theories of management. This platform allows the management theorists to formulate various classical management such as Taylorism, Fayolism and Bureaucracy. For detail example, the most undeniable one is Taylorism created by Frederick W. Taylor in purpose of maximizing efficiency and worker productivity through balancing employees’ and employer’s interest. That is the objective of management. Connecting to homo economicus view, Taylor (1998) clarifies:

The principal object of management should be to secure the maximum prosperity For the employers, couple with the maximum prosperity for employee....Throughout the industrial world, a large part of the organization of the employers, as well as employees is the war rather than the peace, and that perhaps the majority of either side do not believe that it is possible so to arrange their mutual relation that their interest become identical. ...scientific management, on the contrary, has for its very foundation the firm conviction that the true interests of the two are one and the same; prosperity of employer cannot exist through a long term of year unless it is accompanied by prosperity for the employee and vice versa; that is possible to give the workmen what he most wants-high wages-and the employer what he wants-a low labor cost for his manufactures... (p,1)

To reach the goal, after his observation on a proper day's work in steel industry, he realized that by matching men, tools and the tasks they were required to perform, it was possible to increase productivity without putting physical burdens upon the workmen. Instead, it should be set up a systematic structure of management in which comprises of four principles that do not only help the firms to increase productivity, but also to avoid conflict interest. Furthermore, he confirmed that all kinds of every kind of man activities can be applied by scientific methods, particularly objectivist approach to examine daily work, even in a big cooperation (Burrell & Morgan, 1979). That seems consistent with functionalist and radical structuralist which rely on objectivist approach to view the world reality, and concrete and strict control. Lunenburg &Ornstein (2011) summarize the four principles from Taylorism as follows:

- Scientific job analysis: through observation, and careful measurement, management determines the “one best way” of performing each job analysis replaces method.
- Selection of personnel: once the job is analyzed, the next step is to scientifically select and then train, teach, and develop workers.
- Management cooperation: Managers should cooperate with workers to engage that all work being done is in accordance with the principles of the science that has been developed.
- Functional supervising: the managers should plan, organize, and make decision the activities whereas workers perform their job.

This practical priniples as well as other classical theories such as Fayolism and Weberism creates a structural system in organization which using functional paradigm or radical structuralist paradigm as a foundation. As Burrell & Morgan (1979) assert:

The theories of Taylor, Fayol and the classical management school as a whole are founded upon assumptions which characterize the most objectivist region of the functionalist paradigm. The world of organizations is treated as if it were the world of natural phenomena, characterized by a hard concrete reality which can be systematically investigated in a way which reveals its underlying regularities. Above all else it is a world of cause and effect; the task of the management theorist is seen as the identification of the fundamental laws which characterize its day-to-day operation. Given this overall view, the individual is assigned an essentially passive and responding role; the individual and his behaviour at work is seen as being determined by the situation to which he is exposed. From this, the golden rule of scientific management emerges: Get the situation right, and the appropriate human behaviour and organizational performance will follow, (p. 127).
Therefore, Taylor saw economicus man as instrument oriented to work who consider economic incentive as the centred catalyst for motivating them to perform his or her tasks. Technically, they should be led by autocratic or authoritarian leaders because they need telling, directing, and some circumstances, coercing. In similar way, Fayolism, Bureaucracy, system approach and theory X are in form to those of Taylorism.

Social Man in Guiding Neo-Classical Theories

Beyond self-interest oriented doctrine of human nature, Elton Mayo, based on his and Roethlisberger’s experiment in the Hawthorne plant of Western Electric (1927-1933), assume that economic benefits is not the motive that employees desire, and it is not an effective mean for employers for promoting work productivity, but social satisfaction is. It is in line with Aristotle’s perception of human nature, man is a social animal who seeks to make companionship with others. Beneficially, as Forsyth (2010) argues we study about group because it helps us improving productivity in a factory, problem solving in a boardroom, or learning in the classroom. It is a key to many societal problems as racism, sexism, and international conflict. On the other hand, group explain us about the people's feeling and behaviour as well. Specifically, good relationship among colleagues and with their leaders is proofed by plenty of researches and literatures for efficiency and effectiveness. The same as found in Mayo researches.

After the three Hawthorne researches, namely the illumination experiment from 1924 to 1927, a series of experiments (the first Relay Assembly Test Room from April 1927 to February 1933 and the second Relay Assembly Test Room from August 1928 to March 1929), and the Mica Splitting Test Room from October 1928 to September 1930) and the Bank Wiring Observation Room from November 1931 to May 1932). Separately, first experiment showed that the light did not contribute to the work productivity, but special attention to them does. The second experiment revealed that the employees respond to the improve style of supervision. They got more work satisfaction by feeling more valued and responsible for his or her performance belonging to the teams. Thus, social cohesiveness and self-esteem of workers was more important for performance than the improvement of the working environment. The third experiment proved that economic interest is not the reason for them to work productively (Naidu, 1996). Therefore, social relation makes the workers' attitude confident and candid. They developed a sense of participation and become more socially unified. They developed a positive attitude rapidly towards management. The output increased that make supervision revolutionized, improving wholehearted cooperation with management. The workers are easy to be transformed into an enthusiastic team that promote higher productivity regardless physical or economic condition (Handel, 2003).

The Hawthorne experiment gave birth to "social man". It is based on the assumptions bellows:

- Man is primarily motivated by social needs and get a sense of identity through relationship with others.
- As a result of division of work and rationalization, meaning has gone out of works, therefore, satisfaction is sought in social relations on the job.
- Man is more interested in the social forces of peer group than in the incentives and controls of management.
- Man is responsive to management to the extent that a supervisor can meet a subordinate’s social needs and needs acceptance by his fellow workers (Reddy, 2004; Naidu, 1996; Beenerjee, 1995; Agarwal, 1982).

Relying on assumptions above, it can be drawn the principles for effectively managing or leading social man. Firstly, the manager should employees’ social need rather than output. Secondly, the manager should be concerned with people's feelings about their belongingness. Thirdly, group work and individual interaction should be motivated, and organizational structure should be designed democratically and opened so that the employees can freely interact with each other. Then, employee's behaviour should be analysed and motivated in the form of groups and not on individual
basis. Fourthly, the manager or leader should work as an initiator, a facilitator, a helper or a supporter rather than a controller, a director or a commander.

The functionalist paradigm shaped Mayor's and his colleagues' view on experiments in four main ways from two main features of the paradigm, Parato and Durkheim. First, he applied system approach to organization condition as theoretical model to seek social relation among workers in the factory as a mean to boost productivity because they saw workplace is the socialization area, composing of different people from different artefacts or backgrounds, which create a system of various interdependent parts. That socialization relies upon the interactions amongst the workers and between their superiors and themselves (NWE, 2017). It is consistent with the paradigm's point of view upon the society as combination of interrelated individuals that, originally, this assumption was from interactionism. Evidently, Mayor (1933) views in his The Human Problems of an Industrial Civilization: The Early Sociology of Management and Organization that:

Human collaboration in work, in primitive and developed societies, has always depended for its perpetuation upon the evolution of a non‐logical social code which regulates the relations between persons and their attitudes to one another. Insistence upon a merely economic logic of production interferes with the development of such a code and consequently gives rise in the group to a sense of human defeat. This human defeat results in the formation of a social code at a lower level and in opposition to the economic logic. One of its symptoms is "restriction."—especially if the logic is frequently changed— interferes with the development of such a code and consequently gives rise in the group to a sense of human defeat. This human defeat results in the formation of a social code at a lower level and in opposition to the economic logic. One of its symptoms is "restriction." (p.115).

Second, they adopted the realist objectivist approach as a lens of analysis to seek the social reality in their experiments. Practically, by investigating and interviewing, they did not modify or manipulate any interpretation by their own subjective bias. It agrees with the functionalist central position that social reality exists outside the man's consciousness (Burrell & Morgan, 1979). Third, under the influence of Pareto, they believed that social system should be maintained equilibrium; if it is disturbed, forces should be used to restore it (Hassard, 1993). They kept employees' personal equilibrium at work place between economic interest and psychological satisfaction and equilibrium between technical organization and employees' social satisfaction. Fourth, under the influence of Durkheim which values the relations between the individual and society, and the relation of the individual personality to social solidarity (Burrell & Morgan, 1979), they remarked that social norm is the main factors, which might bring a group consensus or unity of their social relation that might influence their efforts to reach the organizational goal.

Because their studies are experiments, the radical structuralist paradigm also cover the objective level of Mayor's and his colleagues' view about the changes in their studies' process and expected results. In the process, there is a change in experimental structure from the top to the bottom (from experimenter or the researcher to the participants). That's a change of the preconditions which is represented by one or more independent variables, also referred to as input variables or predictor variables. Generally, the change in one or more independent variables become result (Gunbayi & Sorm, 2018). In Hawthorne studies, during experiments, they change many times. For example, in the relay-assembly experiments, they changed the breaking time by giving two five-minute breaks (after a discussion with them on the best length of time), and then changing to two ten-minute breaks (not their preference) etc. In illumination experiment, they changed the light intensity. Most of all, they found socialization would bring different outcomes out of the strict rule of management, scientific management.

**Self-Actualizing Man in Guiding Modern Theories**

With regard to self-actualization man, it is an updated new version of social man with the tenet that he needs to find significance for his achievement in accordance with the top Maslow's hierarchical needs. Definitely, it refers to man's desire for self-fulfilment, namely, to the tendency for him to be in
what his potential deserves. In other words, self-actualization man possesses a desire to become more and more what one idiosyncratically is, to become everything that one is capable of becoming (Maslow, 1970). As described by Craighead & Nemeroff (2001), what self-actualizing man perceives is a possibility, he tends to consider as a necessity. He tries to be exceptional rather than normal. When he satisfies, he can be regarded as self-actualizing. Furthermore, self-actualizing man have a tendency of helping other people; they are kind and less self-conscious. He has closer interpersonal relationship, especially with the people who have similar tastes and personalities. In respect to governance tendency, he strongly believes in democratic principles, however, keeping highly discriminating in his friendship. Additionally, the self-actualizing man is more creative than non-self-actualizing man. Self-actualizing man is a very good perceiver of reality and truth, and also that they were generally unconfused about right and wrong, and made ethical decisions more quickly and more surely than average people. He keenly wishes to do for the behalf of ultimate, final values, which is for the sake of principles which seem intrinsically worthwhile. He strongly protects and loves these values, in any case that the value is threatened, they will be aroused to indignation action, and often self-sacrifice (Maslow, 1970 Maslow, Stephens, Heil, 1998).

Moreover, the self-actualized man inherently needs to applied his knowledges, capacity and skills that he has possessed so that he feels he can do something significant; It is contrast to the formal organization which blocks the man potential by strict rules of bureaucracy and incentive (Reddy, 2004). Knowingly, the self-actualizing man assumes that as long as the low needs such as physiological, safety and esteem needs have been met, the next higher level of self-actualization of human demand will be dominant on his behaviour and must be explored and completed in order that he may find social meanings and psychological fulfilment. Moreover, his natural tendency is to direct and control himself by realizing his own needs and the demand of organization (Beenerjee, 1995). Self-actualization man needs autotomizing and independence, so for management implication, the organization should give him opportunities to take risks for better significance exploration of work creativity and maturity.

Therefore, to lead self-actualization man effectively, democratic environment should be designed in organization widely, and power delegation as mean of an effective management should be delivered. According to Maslow (1970), self-actualization man cannot satisfy with basic needs, but with meta motivation from meta needs. The meta needs are wholeness (unity), perfection (balance and harmony), completion (ending), justice(fairness), richness (complexity), simplicity(essence), liveliness (spontaneity), beauty (rightness of form), goodness (benevolence), uniqueness (individuality), playfulness (ease), truth (reality), autonomy(self-sufficiency) and meaningfulness(values) (Coon & Mitterer, 2009). Thus, the manager should adhere to the following characteristics:

1. Has warmth, closeness, and sympathy.
2. Recognizes and shares negative information and feelings.
3. Exhibits trust, openness, and candour.
4. Does not achieve goals by power, deception, or manipulation.
5. Does not project own feelings, motivations, or blame onto others.
6. Does not limit horizons; uses and develops body, mind, and senses.
7. Is not rationalistic; can think in unconventional ways.
8. Is not conforming; regulates behaviour from within (Cherry, 1976).

Paradigmatically, where does the concept of self-actualizing man come from? Maslow is a humanistic psychologist in which humanistic ideology dominates his view of the studies about human work behaviour. Humanists see every man is good in nature, and has unlimited potential. Additionally, it assumes that human being loves autonomy, dignity, and freedom. That is consistent with interpretivists and radical humanists who views the human behaviour as unpredicted one; they respond to the same thing in different ways (Wang, Brain, Hope & Hansman, 2017).
When we examine the implied philosophical frame of references in the actualization man, we have seen that the interpretive paradigm and radical human paradigm have served as active agents in supporting such a concept of man. There are three reasons in which Maslow applied interpretivist and radical humanist paradigm to develop the concept of self-actualizing man. Firstly, Maslow used subjectivist approach of interpretivist and radical humanist paradigms to seek for the reality of human nature. More specifically, he is a voluntarist who emphasizes that the essence of self-actualization is autonomous and free-willed, which is in line with voluntarist assumptions, arguing man is definitely autonomous and free-willed in nature (Lindsay, 1918). Energetically, such a man’s will can shape the organization evolution. As Wundt the father of voluntarist psychology conceived of the development of the will in regressive direction, at the same time, when the will grows more advanced and becomes complex forms of social life, it extends outward. Thus, this cycle of voluntary action orients him to automatic movement (Araujo, 2016). Secondly, epistemologically, the self-actualizing man of Maslow is underpinned by anti-positivist philosophy which holds the position that, in order to understand the human affair, we should understand the subjective world of human experiences, understanding from the inside rather than the outside. On the other hand, respect to the social world, it is essentially relativistic and can only be understood from the point of view of the individuals who are directly involved in the activities which are to be studied (Burrell & Morgan, 1979). Thirdly, methodologically, Maslow was on the side of ideographic dominance because he used naturalistic observation approach as a tool for collecting information or formulate the idea in setting up the hierarchy of human needs.

More evidently, the most influential feature of the radical humanist paradigm in guiding self-actualizing man is Karl Mark. For him, the emancipation of human consciousness is the key for self-actualization creation; in contrast, economic interest is not the ideal need, but the need in spiritual level that leads to psychic motivation is. So, the man could emancipate to overthrow the psychic domination and social oppression via building his capacity. As Fromm (2004) argues, "...the very aim of Marx is to liberate man from the pressure of economic needs, so that he can be fully human; that Marx is primarily concerned with the emancipation of man as an individual, the overcoming of alienation, the restoration of his capacity to relate himself fully to man and to nature; that Marx's philosophy constitutes a spiritual existentialism in secular language and because of this spiritual quality is opposed to the materialistic practice and thinly disguised materialistic philosophy of our age (p.3).

Karl Mark, additionally, believes that man is the production of history, which created by man himself via developing himself; then, he transforms himself. History is the history of man’s self-actualization; that is nothing but the self-creation of man through the process of his work and his production (Fromm, 2004). Thus, human history had created by self-realization man.

Practically, whenever we are aware of the nature of self-actualization man, we are able to select suitable management strategies or theories to administer organization effectively, especially human management, and this concept helps the theorists to stimulate or formulate many management theories or approaches. One of which is career management. The career model presently changes from organization activity into an individual process of self-responsibility by exploring his or her career opportunities, sets career goals, develops strategies, and searches for a relevant definition from time to time (Greenhaus, Callanan & Godshalk, 2010; Smelser & Baltes, 2001). The career annotation implied subjective meaning that is the employment-related experiences (Schreuder & Coetzee, 2006). Definitely, borrowing the concept of career development from Hiebert Worgen, & Schober (2010), career management can be defined as a life-long process of managing learning, work, and transitions in order to move toward a personally determined and evolving preferred future. This view has been embedded by the career anchors that more exactly and explicitly originated from the self-actualizing man. In his longitudinal study, Schein (2006) formulates career anchors in eight categories: autonomy/independence, security/stability, technical/functional competence, general management competency, entrepreneurial creativity, lifestyle, service/dedication to a cause and pure challenge. Therefore, this approach’s overall objective focuses man’s self-development from high level of human need to the highest one in accordance with Maslow’s theory to explore self-actualization.
Besides the theory above, self-actualizing man also functions as a backbone of human resource management approach since, based on the overall goal of human resource management, one is the people management at which aims maximize employees’ work productivity through training and fulfilling their need from the basic to the ultimate goal of employees’ satisfaction, self-actualization. More particularly starting with the responsibilities of human resource manager, it is depicted as the process of recruiting, selecting, inducting employees, providing orientation, imparting training and development, appraising the performance of employees, deciding compensation and providing benefits, motivating employees, maintaining proper relations with employees and their trade unions, ensuring employees safety, welfare and health measures in compliance with labour laws of the land (Arthur, 2006). Philosophically, the objectives and roles of this approach exhibit the idea behind the creation of human resource management that theorist believes the only way to motivate employees to be honest, to get training and to optimize all their potential to meet the organizational expectation is to make them happy via fulfilling the peak of their needs because, according to Maslow et al. (1998) on self-actualizing man, the ideal work's attitude might be under the most favourable circumstances. These integrate the man's work into an individual's definition of life or self-identity and become psychotherapeutic and psychagogic (makes the individual grow well to be a self-actualizing man); then, it improves industry.

Theory Y is also guided by self-actualizing man because, relying on McGregor, man is willing to work and likes their responsibilities, freedom and participation. More importantly, they, in essence, are sufficiently capable of self-control, self-direction and creative. If the manager can provide them the opportunity to fulfill his esteem and self-actualization need. They will exhibit his potential by conducting his duties as the organization expected with inspiration and high performance (Schermerhorn, 2011).

System approach are underpinned by self-actualizing man as well. Remarkably, there are two kinds of system approach, the interpretivist and functionalist system approach. The former has been known as “soft system thinking” which concerns about human being such as perception, value, belief and interest rather than technology, structure or organization as the latter does (Jackson, 2002). In other dimension, both of them have emancipatory characteristics that can be radical structuralist or radical humanist. In line with concept of man, the interpretivist system approach is under the umbrella of the complex man while the functionalist system approach is under the coverage of homo economicus man.

Complex Man in Guiding Postmodern Theories
Homo economicus, social and self-actualizing man are just simplistic and generalized assumptions of specific human nature. They provide us straightforward explanation on man behaviour and methods to manage employees, depending upon particular needs level in particular conditions. However, because fast and constant social change towards more and more complex which is a catalyst for transforming man’s work behaviour from simple to complex one, the man’s management attitude become more diverse and unpredictable. To respond to such a complexity, an adaptable and flexible model was formulated. Complex man depends upon the preposition that human being is under the influences of the unpredictable complex variables which determine human behaviour, and his needs can be ranked hierarchically, but not universally (Reddy, 2004). Distinctive from other men, complex man does not focus on any specific need since he covers all human needs. Originally founded by Schein (1965), its thesis is that man is naturally multiplex and varied, and their behaviour changes at any time in any given situation. The needs are different individually in the organization. Relying on him, some people are fulfilled by basic needs and others’ demand goes to high level. More perplexedly, the same person’s needs may change over the time and circumstances accordingly because the man’s motive is not fixed and immoveable. As a result, motivation also varies; the manager should understand such as complexity and be flexible in applying his approaches. One-size-fits-all is not applicable (Tyson, 2015; Dzimbiri, 2009; Furnham, 2005).
Backed by the interpretive and radical humanist paradigm, Schein views the human nature is complex in the level subjectivist standpoint. Edgar Schein was influenced by the writing of Abraham Maslow (Pierson, Bugental & Schneider, 2001). He is also a humanist, who used anti positivist epistemology which views the social world as being relativistic and being understood only from the standpoint of individuals who participate directly in activities studied (Burrell & Morgan, 1979). Like complex man, the interpretivist paradigm hold the premise that social world of the man is complex; to understand the man we should examine in-depth the meaning, experiences or behavior of individuals within particular social contexts (Markula & Silk, 2011).

The radical humanist paradigm participates in advocating the complex man building as well since, based on complex man, human needs and behavior always change in accordance with distinct settings. As Schein (2004) convincingly argues:

...human nature is complex and malleable that one cannot make a universal statement about human nature; instead, one must be prepared for human variability. Such variability will reflect (1) changes in the life cycle in that motives may change and grow as we mature and (2) changes in social conditions in that we are capable of learning new motives as may be required by new situations (p.173).

Therefore, an individual’s demands possess the natural potentiality and emancipation of change in their opinion on work and satisfaction. It is consistent with the radical humanist paradigm which considers potentiality and emancipation as the cause of transformation in the subjective level because when man sustains his life through works, and communication; phenomenologically, responsibilities and autonomy interest causes emancipatory cognitive interest which creates self-reflection for self-formative process, and such a self-reflection changes a life (Habermas, 1971). Shortly, complex man does include the assumption of self-actualizing man as its component as well.

On the other hand, the functionalist and radical humanist paradigms contribute to build complex man either since the assumptions of complex man partly put focus on the importance of basic needs. These attributes affect the way in which the theorists view the characteristics of man. Such an opinion orients the theorists themselves to develop new management theories, and leaders to choose leadership approaches in organization operation. Overall, paradigmatically, complex man is gotten the influence of the functionalist and the radical structuralist paradigm in the same mode of homo economicus man and social man receive because complex man is the combination of all concepts of previous men.

Practically, learning organization theory is supported by complex man because, based upon it, the organization should endeavor to provide all needs which the employees should receive so that they are happy to develop their skills and capacity. These, all of individuals’ and organizational needs, should be kept equilibrium (Marquardt, 2002). Ingredients of learning organization consists of five components (Senge, 1990). Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively while metal models are the abilities to unearth our internal pictures of the world, to scrutinize them, and to make them open to the influence of others. Thirdly, team learning is the capacity to think together which is gained by mastering the practice of dialogue and discussion. As Marquardt (2002) defines individual learning as the changes in skills, insights, knowledge, attitudes, and values acquired through self-study, technology based instruction, and observation whereas group learning covers the increase in knowledge, skills, and competencies accomplished by and within groups, and organizational learning represents the enhanced intellectual and productive capability gained through commitment to and opportunities for continuous improvement across the organization. Fourthly, systems thinking is the discipline that integrates the others, fusing them into a coherent body of theory and practice. In essence, it values the flexibility and agility in response to the changing environment. Finally, building shared vision is the practice of unearthing shared pictures of the future that foster genuine commitment (Fulmer & Keys, 1998). So, since learning organization is under the
influence of complex man, its assumptions are also similar to interpretivist and radical humanist paradigms in the sense that it lays emphasis on maintaining equilibrium between organization’s and individuals’ needs and the transformational process of human development. Moreover, the functionalist and the radical structuralist are embedded in the theory either because the company should provide the employees the basic needs as a force so that they are willing to improve capacity. However, the interpretivist and radical humanist are more dominant than the functionalist and radical structuralist paradigms in the theory.

Looking from macro view of total quality management coverage rather than the process in the mechanic management system, we have seen that it is dominated by the shadow of complex man as well since, regarding customer satisfaction as the ultimate goal, Joseph M. Juran refers to it as the set of management processes and systems that create delighted customers through empowered employees leading to higher venue and higher cost (Ross, 1999). According to Deming (2018), total quality management comprises of fourteen principles within which most of those emphasize on human needs from the basic to the highest one. For instance, first principle is that the organization should create constancy of purpose for continual improvement of products and service which use resources for innovative idea, for education and research, and consistently improve designing product and service for customer satisfaction, for better life of the people and for market positon while the second principle focuses on adopting of new philosophy about a commitment to quality, eliminating obstacle and fulfilling employee's needs as a mean for survival and global competitiveness. Other principle is to train the employees new skills for achieving the quality of their job, and the organization should get rid of fear by creating an opened environment for employees to ask questions or to express their opinion because Deming (2018) believes that open communication and coordination based on the common goal improve quality and productivity; additionally, employees should be motivated, encouraged and rewarded for achievement.

Developed by William Ouchi, theory Z is the extension of theory X and Y, which is based upon the synthesis of American individualism and Japanese collectivism. Theory Z is a humanistic approach in management that emphasizes homogeneity of cultures, beliefs and human interest that is called clan culture, valuing the importance of social relation among members to accomplish congruence of individuals and group goal. This concern contributes crucially to the long-term commitment of the organization. Not only focusing on humanistic view, theory Z also maintains some components of bureaucracy characteristics: formal authority relations, performance evaluation, and work specialization (Mehta, 2009). Therefore, theory Z is directed by complex man since it takes care of all aspects of employees’ life, both low and higher human needs, including family life as the necessary elements man cannot live or work without (Fiore, 2004). Totally, theory Z was built upon the assumptions of complex man, too. Theoretically, it is very clear that the indirect influences of the synthesis of four paradigms’ ideology are occupying in-depth the path through which the theory works because the theory is humanistic in nature and strict rules of classically technical approach in managing process.

All in all, Maslow’s hierarchical needs plays central roles in creating theories because of their rational explanation on the natural motive as driving force behind human behaviour. Management theorists, who are basic need oriented, are more likely to be on authoritarian tendency which prefers strict and coercive to democratic approaches in management as high need oriented ones. Furthermore, those who are on the side of complex man are mixed and more flexible in management approaches. Those have been regarded as postmodern theories.

CONCLUSION

Consequentially, the four paradigms do not act as four dynamic lenses of social analysis only, but also as powerful theoretical frameworks for directing management theory or approach formulation. A long the way of developing theories, it was founded in this article that the paradigms influences the theorists or practitioners indirectly and concept of man directly.
Those man assumptions direct their views on man nature; as result that nature allows them to find proper methods to design practical approaches. In addition to the effect of the paradigms, based on their assumptions of social regulation and radical change and their approaches, subjectivist and objectivist, we have seen the paradigms are able to guide the theory directly by excluding the concept of man in the formulation of the theory process.

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