

Analysis of Student Capability on Integrated Digital Broadcasting System Learning

Eka Pramono Adi, Henry Praherdhiono, Yulias Prihatmoko, Sulton, Nunung Nindigraha

Abstract: *The development from the era of competence to the capability era requires the design and management of learning ecology. Capability is a condition of various additional competencies that support the core competencies. The learning process is designed and managed using learning through the integration of digital broadcasting systems to strengthen capability. The research objective is to see how 1) strengthening the capabilities of students to work in innovative ideas as improvable objects are related and 2) how they play a role as creating ideas during the process of knowledge construction and reinforcement capabilities. Capability building activities support the UM curriculum and to construct learning outcomes.*

Index Terms: *Keywords— Capability, Profession TEP, The Achievement of Learning.*

I. INTRODUCTION

Changes in the era of competence to the capability era are a form of development in the learning system. Competency alone is not enough. The capability development not pitch limits on the development of competence in a particular profession. But more leads to the development of competencies that integrate additional specific competencies to support the professional competence into a complete science. (Nussbaum, 2001, 2011, Sen, 1993, 2004, 2005) describe capability as a competency by wrapping other competencies to support core competencies that are intact. Staron (2011a) presents a learning framework in capability development.

Framework of learning which is presented by Staron (2011b) quite flexible. As a model that explores the growth and potential of students. Can accommodate the regulation of independent learning. More emphasize on the power of learning learners from the use of the strategy. And acknowledge learners as a wholeness that is responsible responsibility in learning.

Learning design of Educational Technology Profession course, State University of Malang was designed on a strict lecture system. As Reigeluth (2013) expressed about learning, before the 21st century education made the industrial model a paradigm in which manufacturing mass

production and production were highly valued. Learning process TEP professional courses have been dominated by recognition and tendencies that highlight individual knowledge and the accumulation of learning processes of students with the same content and skills that have been determined by strict curriculum guidelines with the right time frame. These rigorous learning conditions are based on several studies (Adams and Engelmann, 1996; Magliaro et al., 2005).

The results of Praherdhiono et al. (2018) explain that UM students have differences in each year. This difference is based on the results of the survey each year that have differences with regard to attitudes, work habits, motivation and other aspects. Organizing learning is needed to overcome the differences found in each year. Serrat (2017) states that knowledge must always be enriched both from internal and external learning processes. For this to happen, there needs to be synergy and organization in the organization, people, knowledge and technology for learning (Serrat, 2017). Organizing learning must respect the role to be played by students and learners in the development of learning. This shows having an inspirational vision for learning strategies that will support learning in achieving its vision.

Yeung (1999a) offers organizing learning to develop capabilities. Yeung (1999a) provides six keys in capability development, (1) there are four learning organizers: experimentation, competency acquisition, benchmarking, and continuous improvement; (2) the effectiveness of organizing learning based on conformity with the objectives, content and characteristics of students; (3) Different learning styles produce different performance consequences; (4) organizing learning not only introduces innovative ideas but also generalizes ideas that cross the boundaries of disciplines (transdisciplinary); (5) organizing learning must be able to accommodate learning difficulties or persons with disabilities; (6) specific practice management can be used to develop capabilities.

Learned to accommodate differences in a r on each individual is very important in the learning organization. Truong (2016) states that different students have different ways of learning. Some can understand quickly through images, others may prefer text and reading. Some may even study theory well, others may learn through experiments and examples (Truong, 2016). By gaining insight into different learning styles, he offers a means to design and provide interventions tailored to individual needs. For example, for students, insight into their own style will enable them to

Revised Manuscript Received on 04 May 2019

Eka Pramono Adi, Education Technology, Universitas Negeri Malang, eka.pramono.fip@um.ac.id

Henry Praherdhiono, Education Technology, Universitas Negeri Malang, henry.praherdhiono.fip@um.ac.id

Yulias Prihatmoko, Education Technology, Universitas Negeri Malang, yulias.prihatmoko.fip@um.ac.id

Sulton, Education Technology, Universitas Negeri Malang, sulton.fip@um.ac.id

Nunung Nindigraha, Education Technology, Universitas Negeri Malang, n.nindigraha@gmail.com.

be more confident in learning and optimizing their learning paths (Herod, 2004).

Practically Yeung (1999) , describing the typology of organizing learning provides the best framework for understanding capability development. This approach is to develop kapabilitas. The capabilities produced are being innovators, competent workers, benchmarkers, and expert improvers. In short, all four organizing learning reflect four different ways to produce capability, although with experimentation and acquisition of competencies the strongest encourages originality, innovation, and uniqueness.

Digital Broadcasting System integration in capability development is one of the solutions . With an integrated online learning -based technology on the system "cloud computing" is a broadcasting service can be footing the development of learning. Integration of Digital Broadcasting System delivered through analog/digital format with frequency and internet streaming from data centers that have high specifications built in locations far from users and educational institutions (Cervone, 2012). Server providers have the features they have invested in the latest cooling systems and service optimization techniques (Margaryan et al., 2015). Data centers developed by service providers are located near locations of cheap electricity sources. Even data center locations are not always known to users, although in some cases users need services located in certain countries because of protection law data. Service providers provide access and control rights to data stored through the "cloud computing" system.

II. METHOD

A. Research design

Research using method survey conducted to determine respond about the research, to obtain a picture of the quantity and quality of how students work with innovative ideas as improvable objects are associated with how they play a role as creating ideas for their knowledge construction process. Previous research carried out empirical studies on student knowledge construction activities mainly focused on the effective exploration of the implementation of learning strategies and technology design as a tool to improve student learning in the field of study. Studies specifically to see how students understand the strengthening of capabilities and how perceptions are associated with the practice of their professional knowledge TEP.

Given the central importance of improvement ideas are sustainable in the knowledge construction process, it is necessary to explore the quantity and quality of the process creating ideas. In addition, it will be more advanced if the knowledge in the field of educational technology profession to increase knowledge process with an adequate understanding of how the process creating and development of ideas related to the students how they see the role of the idea that to work and their knowledge. This suggests that when they were engaged in the practice of clicking construction of knowledge, students are getting to be more likely to notice and creating ideas, not just as an individual's mental construction for the purpose of achievement of personal knowledge, but as a subject improvable for the

purpose of advancement of the knowledge society.

B. Respondents

The study was conducted on students who took the TEP profession lectures majoring in TEP, Faculty of Education, Malang State University. With a total of 92 students divided into 3 classes. As Indonesian and Asian cultures traditionally tend to encourage more didactic pedagogy, teaching at the university in question also tends to emphasize the importance of knowledge acquisition, as well as learning from textbook knowledge. In this special course, however, pedagogical knowledge construction is employed as an innovative pedagogy to encourage students' creative capacity for knowledge creation.

C. Research Context

As the main theme for lectures is about strengthening the capability of the TEP profession is a learning technologist. Menpan (2017) describes the neighbour p rofesi or office PTP has a fundamental duty to conduct the analysis and assessment, design, production, implementation, control, and e valuations for technology development learning. And the more widely again as a choice of career graduates of technology education are listed on <https://education.ufl.edu/educational-technology/career-options/> is a challenge that must be faced by TEP graduates in the future. For this purpose, constructing collaborative knowledge in an environment that is supported by technology as a tool for discussion in building knowledge (Scardamalia and Bereiter, 2003) , used as collaborative problem solving and discussion space for students to be involved in development their group knowledge. This learning lasts for 18 weeks (in one semester), which is then divided into the same two phases using part time as the dividing point of the UTS and UAS to check performance. Throughout the semester, the main learning task is to solve the problem of the TEP profession by identifying the self-identification of the students' own interests .

III. RESULTS AND DISCUSSION

In general, lecturers still apply learning techniques that rely on the behaviorism paradigm. Lecturers generally encourage students with their own experience as is done by parents. Pedagogical organizations conducted by lecturers are generally in the form of stimuli, responses, and reinforcement in teaching known as programmed or structured learning. The development of learning media shifts towards audio visual. Wrong when it's a programmed video tutorial. The tutorial technique is step-by-step learning, following the flow of instructions, practicing practice, providing technical reinforcement. Strengthening techniques are intended to make experiences more than discovery activities, where students find answers instead of them. The next audio visual technique is direct learning is, written based on empirical methods for small group instruction, but provides fast paced, constant interaction between students and lecturers.

Broadcast implementation is generally only through Computer Assisted Learning



(CAL). Message delivery activities through CAL are programmed in such a way that students get information until it reaches its peak. The initial activity is that CAL is a student learning such as taking part in training and practice or a tutorial format resembling programmed instructions; Small units of information are followed by questions and student responses. A correct response has been confirmed, while an incorrect response may be a student branch to an order of repair or an easier question.

The view of developing the capability of the Education Technology profession from the point of view of the Education Technology students is very broad. The results of a survey of 3 students, each offering approximately 40 students resulted in very diverse views. Practically (Yeung, 1999) , describing the typology of organizing learning provides the best framework for understanding the development of capabilities. This approach is to develop kapabilitas. The capabilities produced are being innovators, competent workers, benchmarkers, and expert improvers .

A. Capability Development Analysis as an Innovator

Development capability as innovators marked by several characteristics of which is the way t ERUs are constantly looking for new ideas, then constantly want to find new ways to engage, m emperoleh many new ideas and want to be known, and m enjadi first circles with new ideas or new concepts.

Apakah anda terus-menerus mencari ide-ide baru

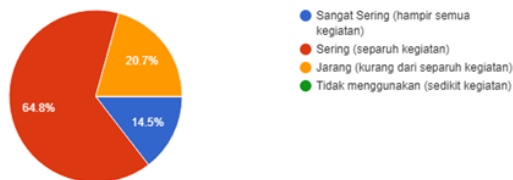


Figure 1. Student Distribution of capabilities as Innovators

Distribution in the development of self- learners as an innovator is reflected in the image 1. A total of 14.5% of students felt very often in search of ideas new. 64.8% of students answered often look for ideas just are kept constant. And the percentage of students who rarely seek ideas just are constantly being number 20.7%. From the distribution of the can in conclude that most major college students trying to look for ideas just are kept constant.

B. Capability Development Analysis as a Worker

Needs capabilities of students as workers to bridge the gain competency new, able to work in team and able to absorb new competence, able to perform activities based on students' skills alone, and b elajar / m empelajari (on the condition) is an essential part of the strategy of student activities.

Apakah anda ingin mampu bekerja secara TIM dan mampu menyerap kompetensi baru



Figure 2. Student distribution of capabilities as workers

Distribution in the self- development of students as workers is illustrated in Figure 2. As many as 48.2% of students feel they want to be able to work in teams and be able to absorb new competencies. It also occurs on a desire that is very high with a percentage of 44.7%. And the percentage of students who rarely want very low at 7.1%. From the distribution of the can in conclude that most small the students who do not want to work in a team and absorb competency new.

C. Capability Development Analysis as a benchmark

Student needs with Student Capability as benchmarked in order to bridge students to: be able to learn from the results of others, and able to use a product / learning activity or implement the process only after being fully tested by other students or lecturers. Knowledge is broad and has a way to scan what other students / lecturers do. Ability to focus scanning activities on specific activities and details carried out by other students / lecturers. Measure his own progress towards competitor performance.

Apakah anda ingin belajar dari hasil orang lain, dan mampu menggunakan sebuah produk/kegiatan pembelajaran at...hasil orang lain tersebut telah teruji

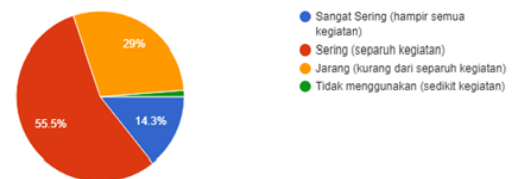


Figure 3. Students' distribution of capabilities as a benchmark

Distribution in the development of self- learners as benchmarked depicted in the picture 3. A total of 14.3% of students felt desire to learn from the results of other people. It it also occurs in stages often with a percentage of 55.5%. And the percentage of students that is rare is 29%. From the distribution of the can in conclude that most large student wants to learn from the results of other people.

D. Capability Development Analysis as an Expert

Student needs with capability as an expert / improver (expert / improver) in order to bridge students to:



Able to master new ideas after that and then move on to the next idea. Able to upgrade how to do things until the student has the right abilities. Want to be known as the best technical expert. Has a benchmark by measuring the progress of its performance on previous student performance.

Apakah anda ingin mengukur kemajuan diri anda sendiri terhadap kinerja pesaing

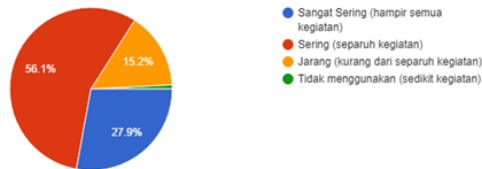


Figure 4. Student distribution of capabilities as an expert

Distribution in the student's self- development as an expert is illustrated in Figure 4. As many as 27.9 % of students feel very often in measuring their development. It also occurs in stages frequently with the percentage of 56,1 %. And the percentage of students that is rare is 15.2 %. From the distribution of the can in conclude that most major college students want megetahui developments in themselves.

E. Digital Broadcasting Integration in Capability Development

TEP students are representations of the Z genes that have had different learning ecology from the previous generation. Learning ecology that has been felt in the world of education is an effective metaphor for giving meaning to life-based basic concepts as project terms (Hays, 2005) . Ecology learns to embrace the idea of dynamic systems. Metaphors that directly increase understanding of what needs to be done in developing skills in the field of education in the Knowledge Age.

Learning Ecology is a dynamic, adaptive and diverse condition. From exploring the dimensions of the Professional metaphor, the development of a Life-Based Learning model offers the development of abilities in the freedom to find ways to get the right or to get a solution. More importantly, the ecology of learning is a metaphor of drawing our attention to the way that the world is intuitive, caring and responsible.

Learning Ecology as a professional metaphor in capability development is (Staron, 2011c) :

- The approach is not about precision or how to set previously in doing something. Instead of being a prediction, it is anticipatory.
- It is the skeleton of permissiveness which means maybe there is tension and irritation because it is not there is an answer that is clear. This is why, rather than, how to approach.
- Some things will go wrong, and this will help to make a shift.
- is an approximation rather than accuracy.
- The lack of clarity is power. The lack of clarity is a concept that is precisely what provides the framework of work to understand the chaos.
- Organizing themselves occur in an ecological, but

probably not No explanations were satisfactory to where the pattern of organizing derived

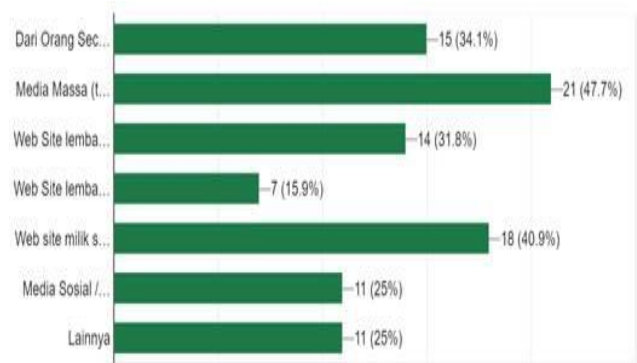


Figure 5. Application data that affects students

The scientific paradigm and knowledge are compatible with the field of education. The paradigm that emerges in technological science influences the emergence of various changes based on assets or the strength of approaches for individuals and organizations (companies). Basically, the development of capability focuses on collaboration, identifying, and realizing a good work ethic and then investing in solving problems (Staron, 2011c) . Strengthening capabilities in science b idang education identified as a key discipline of positive psychology theoretical support learners strength and orientation of development based capability bag learners.

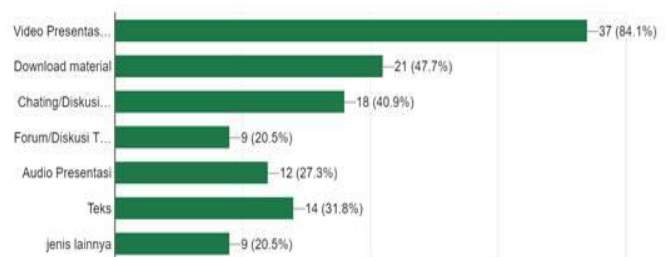


Figure 6. Data on digital media types desires for students

In general, students rely on videos to learn in the development of capabilities . Strengthening capabilities in lecturing the educational technology profession is an evolution based on awareness, relevance, unavoidable and willing to devote energy to the welfare of others. The concept of evolution with life as explained in positive psychology is very compatible with having a connection in the ecology of metaphor learning.

IV. CONCLUSION

Capability that is produced is becoming innovators, workers are competent, benchmarked, and expert improvers (expert improvise). In summary, the four organizing the learning that reflect the four ways that differ for generating capability, although the experiment and the acquisition of competence most powerful encourage originality, innovation, and uniqueness.

Strengthening capability in the curriculum can lay the



foundation of capability as the achievement of graduate learning with orientation: 1) On the needs or specialization of students towards occupation which will become his passion. 2) Creation of autonomy in determining the skills that will be held in accordance with the areas of expertise terms of this is the neighbor study of the profession technologist learning. 3) Creating the ability to apply and create their expertise as a standard outcome of learning outcome. 4) Creating the ability to learn throughout life, to acquire and expand knowledge and apply it, as a form of refinement of skills life be sustainable.

REFERENCES

- [1] Adams, G.L., Engelmann, S., 1996. *Research on Direct Instruction: 25 Years beyond DISTAR*. ERIC.
- [2] Cervone, H.F., 2012. *Digital learning object repositories*. OCLC Syst. Serv. Int. Digit. Libr. Perspect. 28, 14–16.
- [3] Hays, R.T., 2005. *The effectiveness of instructional games: A literature review and discussion*. naval air warfare center training systems div orlando fl.
- [4] herod, I., 2004. *learning styles and strategies*. Adult Learn. Lit. 310–800.
- [5] Januszewski, A., Molenda, M., 2013. *Educational technology: A definition with commentary*. Routledge.
- [6] Magliaro, S.G., Lockee, B.B., Burton, J.K., 2005. *Direct instruction revisited: A key model for instructional technology*. Educ. Technol. Res. Dev. 53, 41–55.
- [7] Margaryan, A., Bianco, M., Littlejohn, A., 2015. *Instructional quality of massive open online courses (MOOCs)*. Comput. Educ. 80, 77–83.
- [8] Menpan, 2017. *Peraturan Menteri Negara Pendayagunaan Aparatur Negara dan Reformasi Birokrasi Nomor 28 Tahun 2017 tentang Jabatan Fungsional Pengembang Teknologi Pembelajaran*.
- [9] Nussbaum, M.C., 2011. *Creating capabilities*. Harvard University Press.
- [10] Nussbaum, M.C., 2001. *Women and human development: The capabilities approach*. Cambridge University Press.
- [11] Praherdhiono, H., Sulton, M., Lioe, A.T., Hammad, J., 2018. *Open Learning Systems for Learners with Capabilities as Innovators at State University of Malang*. Atlantis Press. <https://doi.org/10.2991/icli-17.2018.36>
- [12] Reigeluth, C.M., 2013. *Instructional design theories and models: An overview of their current status*. Routledge.
- [13] Scardamalia, M., Bereiter, C., 2003. *Knowledge building environments: Extending the limits of the possible in education and knowledge work*. Encycl. Distrib. Learn. 269–272.
- [14] Sen, A., 2005. Human rights and capabilities. *J. Hum. Dev.* 6, 151–166.
- [15] Sen, A., 2004. *Capabilities, lists, and public reason: continuing the conversation*. Fem. Econ. 10, 77–80.
- [16] Sen, A., 1993. Capability and well-being. *Qual. Life* 30.
- [17] Serrat, O., 2017. *Building a learning organization, in: Knowledge Solutions*. Springer, pp. 57–67.
- [18] Staron, M., 2011a. *Life-Based Learning Model—A Model For Strength-Based Approaches To Capability Development and Implications for Personal Development Planning*. Aust. Gov. Dep. Educ. Sci. Train. TAFE NSW Available -Line [Http://learningtobeprofessional.com/page32893040Life-Based-Learn](http://learningtobeprofessional.com/page32893040Life-Based-Learn). Accessed 21, 2014.
- [19] Staron, M., 2011b. *Life-Based Learning Model—A Model For Strength-Based Approaches To Capability Development and Implications for Personal Development Planning*. Aust. Gov. Dep. Educ. Sci. Train. TAFE NSW Available -Line [Http://learningtobeprofessional.com/page32893040Life-Based-Learn](http://learningtobeprofessional.com/page32893040Life-Based-Learn). Accessed 21, 2014.
- [20] Staron, M., 2011c. *Life-Based Learning Model—A Model For Strength-Based Approaches To Capability Development and Implications for Personal Development Planning*. Aust. Gov. Dep. Educ. Sci. Train. TAFE NSW Available -Line [Http://learningtobeprofessional.com/page32893040Life-Based-Learn](http://learningtobeprofessional.com/page32893040Life-Based-Learn). Accessed 21, 2014.
- [21] Truong, H.M., 2016. Integrating learning styles and adaptive e-learning system: Current developments, problems and opportunities. *Comput. Hum. Behav.* 55, 1185–1193. <https://doi.org/10.1016/j.chb.2015.02.014>
- [22] Yeung, A.K., 1999. *Organizational learning capability*. Oxford University Press on Demand.