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Validity of Learning Module Natural Sciences Oriented Constructivism With The Contain Of Character Education For Students of Class VIII AT Yunior Hight School

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***Abstract* –Referring to primary data collected through observation and interview to natural science teachers and some students, it is found that there is no natural science teaching materials in the form of learning modules that can make learners learn independently, build their own knowledge, and construct good character in themselves. In order to address this problem, then it is developed natural science learning module oriented to constructivism with the contain of character education. The purpose of this study is to reconstruct valid module of natural science learning materials. This type of research is a development research using the Plomp model. The development phase of the Plomp model consists of 3 stages, namely 1) preliminary research phase, 2) development or prototyping phase, and 3) assessment phase. The result of the study shows that natural science learning module oriented to constructivism with the contain of character education for students class VIII of Yunior High School is strongly valid. In future work, practicality and effectiveness will be investigated.**

***Keywords* – Development; Learning module of natural science; Constructivism approach; Character education**

I. INTRODUCTION

Education is all the efforts undertaken to educate people so they can grow and develop and have the potential or ability as appropriate. The Government is seeking various things to improve the quality of learning by improving the curriculum. What has recently been done is the improvement of the education unit level curriculum (KTSP) into the 2013 curriculum. Development of curriculum 2013 focused on the formation of competence and character of learners in the form of alloy knowledge, attitudes, and skills. Science learning should encourage learners to be able to construct their knowledge independently through learning experiences. Based on the results of preliminary observations conducted schools, researchers found things that become problems in science learning. From the source of books in the library are still lacking in meeting the needs of learners for the learning process, learners rely solely on the explanation of teachers as sources and centers of learning information to them, have never used teaching materials such as modules, learners do not have Book packages or other teaching materials as a handle, learners have difficulty to build their own concepts, the ability of learners is still low in constructing the initial knowledge and still need to be guided by the teacher in constructing the initial knowledge.

The existence of early knowledge to make learners can easily follow the learning process well. This is accordance with the theory of constructivism that the success of learning depends not only on the environment or learning conditions, but also influenced by the early knowledge of learners. Student learning outcomes are also closely related to the understanding of learners in understanding the concept of science subject matter and it is very important to do in the

learning process. But not all learners have the same speed to understand the concepts of the subject matter discussed in the classroom. It is necessary for learning materials that can focus the capabilities of individual learners and can be studied independently with limited assistance from teachers with the aim of complementing the knowledge initially corresponds to the speed of learning to learners. One that can solve this problem is teaching materials in the form of learning modules. Modules are teaching materials that are arranged systematically with language that is easily understood by learners and can be studied independently with limited help from teachers or educators (Purwanto, 2014).

In addition, the module also has many advantages compared to other written teaching materials, such as the purpose of learning more clearly and the ability of accommodation to the difference in the pace of learners in understanding the material (Nasution, 2010). Furthermore, according to Mulyasa (2006) module is a teaching material that contains learning materials are arranged in a systematic, operational and directed to be used by learners because it is accompanied by guidelines for its use. Sudjana and Rivai (2003) revealed that the purpose of learning with the module is students able to follow the learning according to their own speed and ability. In learning using the module, learners can learn individually in the sense that they can adjust their learning speed with their respective abilities. In addition to the module, learners can measure their level of mastery of the given material.

A module as a delivery system in the learning process will be more optimal if oriented to a particular approach. One approach used in the development of this module is the constructivism approach. According to the constructivism approach, learners construct existing knowledge with their own experience to form new knowledge. Nurhadi (2003) argues in the view of constructivism, knowledge grows and develops through experience. Understanding develops deeper and stronger if always tested with new experiences. Based on these problems, the development of materials or guided learning resources, systematic, in accordance with the needs of learners, because with the exposure of structured materials will also help learners in building conceptual understanding and enable learners to learn independently.

Constructivism learning is a learning that develops learners' thinking to learn more meaningfully by working alone, finding their own, and constructing their own new knowledge and skills (Sumiati and Asra, 2007). Basically, learners do not bring empty heads to school, but actually, they already have the initial knowledge or concept of something based on experience in everyday life (Lufri, 2007). In learning using constructivism emphasizes the development of skills, skills and thinking of learners (Isjoni in Sutisna, 2013). Learners are also required to be able to link existing knowledge with new knowledge as well as experience in the learners (Tjulifa, 2013). This is the advantage and characteristic of the constructivism approach than any other approach.

Science learning should encourage learners to be able to construct their knowledge independently through learning experiences (Sudarisman, 2012). Science learning according to constructivism perspective contains four core activities, which are related to initial knowledge, real experience, social interaction and environmental sensitivity (Nuryanti, 2005 in Sudarsiman, 2012). By using constructivism-oriented modules it is hoped that learners can form new understandings based on their initial knowledge and learning experience. After learners understand the learning materials they are expected to become more motivated in learning.

In the development of learning module natural sciences oriented constructivism with the contain of character education is used curriculum 2013. Curriculum 2013 aims to change the attitude of learners to be more polite through the values of character education contained in it. This means that if you have the attitude and mentality are praise-worthy learners will be able to absorb science well and certainly be a clean generation. Science learning is one of the substances of national education that make an important contribution to the character formation of learners. This is in accordance with Junarso's opinion in Setyaningrum and Hasamah (2012). Character as a result of education brings meaning to life in society. Therefore, the importance of understanding the value of the characters implemented in the science lesson. With this character, education is expected that learners not only get good output in the form of cognitive learning outcomes only but also form their (affective) attitude for better, so that between the cognitive and affective learning results obtained learners to be balanced.

II. Review Of Literature

The teaching materials in the form of developed modules are stated valid after fulfilling the aspects of construct, content aspect, aspects of kegrafikaan, and language aspects. Trianto (2010) states that valid means the assessment has provided accurate information about the developed teaching materials. A measuring instrument is valid if it can be used to measure what should be measured (Sugiyono, 2007). The

same thing is also raised by Arikunto (2008), if a data generated from a product is valid, then it can be said that the developed product has provided a description of the development objectives correctly and according to reality or the real situation.

Teaching materials are all forms of materials used to assist teachers in carrying out teaching and learning activities (Yunita and Hakim, 2014). One of the relevant media in the learning process is the module. The module is a resource that contains materials, methods, and evaluations systematically arranged and interesting (Yulastri Asmar, Hidayat Hendra & Islami Syaiful, 2017). The module is a unified whole, consisting of a series of learning activities, which has obviously provided effective learning outcomes in achieving clearly defined and specific objectives. In each case, the average post-test score for learners who saw the module was significantly higher than that of non-module learners (Salleh & Zakaria, 2012).

Constructivism is a learning approach that believes that learners are actively building their own knowledge and reality is determined by the person's own experience (Abimanyu, 2008). According to Doolittle (2014), constructivism is an approach that enables learners to build their own knowledge from the interpretation of their experiences. Constructivism is used to help learners in learning that is connecting new experiences and information with existing knowledge into new knowledge so that the results bring new cognitive structure (Fitri, 2013).

Constructivism holds that individuals gradually build their own understanding of the world through experience, maturation, and interaction with the environment (Rovai, 2004). This is in line with opinion (Tan, 2017) which states that in constructivism knowledge is acquired when the learner leads in knowledge building activities. Constructivism is a learning theory that suggests that learners learn by actively building their own knowledge. According to Von Glasersfeld (1995), "Concepts can not be transferred only from teacher to learner, but must be built by the learners themselves". Learning is a process that involves the active construction of learners (Duffy and Cunningham, 1996). Constructivism can be an effective teaching approach (Alsulami, 2016). Under constructivist theory, learners will use the knowledge they already have to build meaningful new knowledge for them by the ongoing construction, evaluation, and modification process (Von Glasersfeld, 1983). Their developed knowledge is shaped by the activities in which they are involved (Miriam Schcolnik, Sara Kol, and Joan Abarbanel, 2006).

In the view of constructivism, learners build their knowledge based on prior knowledge (Baştürk, 2016). Activities in the learning process enable learners to participate in their learning process, become autonomous and independent, while teachers act as facilitators, support learners in their learning process and facilitate learners (Neo, Neo, & Xiao-lian, 2007). All new knowledge is obtained with respect to the prior knowledge that the learners have (Mbati, 2013). The constructivist learning approach helps learners internalize the information and transform it into new knowledge (Inan, 2013). In learning, it can be seen that the constructivism learning approach has a positive effect on the academic achievement of learners (Ayaz, 2015). The developed module will contain elements of constructivism proposed by Suparno (2006), namely the orientation, elicitation, restructuring of ideas, the use of ideas in many situations, and the review.

Character education is the process of transferring and obtaining value in children. Transferring values to children and practicing them in their lives is not as easy as expected. Use of various methods and media is necessary (Turan & Ulutas, 2016). Character education is education that is able to build character. Character education also emphasizes the importance of things like "respect and responsibility (Holt, 1997). The initial goal of character education is to set an example of character traits that are good for learners (Skaggs and Bodenhorn, 2006). Numerous studies have found positive results in the application of character education in schools, including higher academic achievement (Agboola and Tsai, 2012). The application of character education in accordance with the purpose of education, which is to make individuals grow and grow into an independent human being, responsible, creative, knowledgeable, healthy, noble and good views from the physical and spiritual aspects.

III. METHODOLOGY

This research type is development research. Another term often used for development research is design research; this term is used by Plomp. The stages of validation of learning module natural sciences oriented constructivism with the contain of character education using the Plomp model are as follows.

3.1. Development of Prototype I.

The design of prototype in the early stages is called prototype I evaluated by self-evaluation by revising the natural sains module designed using a check list. The evaluation itself is done to check the design errors that exist

in the module. Next prototype I was revised and then continued at prototype II development stage.

3.2. Development of Prototype II.

Prototype II is a development stage by consulting with experts (expert review), i.e. natural sains module discussed to the experts to obtain a valid natural sains module. Validated aspects include aspects of the construct, content aspects, graphic aspects, and language aspects. Based on validation result, revision of natural sciences module is developed.

IV. Result and Discussion

4.1. Result

The results obtained at the initial investigative stage were used as guidelines in developing a learning module natural sciences oriented constructivism with the contain of character education. The results of the development carried out at this stage are as follows.

4.1.1. Prototype I.

Prototype I start from the design and manufacture of learning module natural sciences oriented constructivism with the contain of character education. The module contains the cover, foreword, core competency, basic competence, competency achievement indicator, module use instructions, indicators of competence achievement, learning objectives, material description, picture, summary, competence test, key answer competency test, feedback, glossary, and references. The learning module natural science is designed with *Microsoft Office Word 2007* and *Microsoft Office Publisher 2007*.

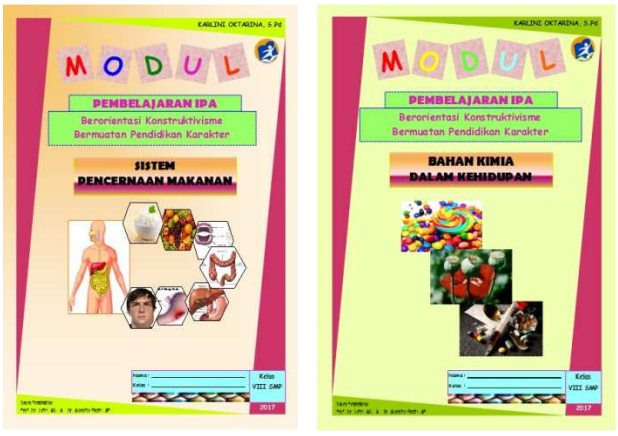

Figure 1. Cover of Module

The results of the evaluation itself indicate that the module components already exist and accordingly. However, there are some errors that occur that there are some posts whose letters are not complete so that its meaning becomes unclear, in the picture, there is not yet have the source. After the evaluation, it was revised by improving the incomplete writing and complete the source on the drawing so that the resulting learning module natural sciences oriented constructivism with the contain of character education.

4.1.2. Prototype II.

In prototype II development stage, the formative evaluation activity is done that is seeing the validity of learning module natural sciences oriented constructivism with the contain of character education based on expert's judgment which includes four aspects of construct, content, graphics, and language. Evaluation tool used is a validation sheet of learning module natural sciences oriented constructivism with the contain of character education. Validation is done by six validators. In addition to assessing the module, the validator is also required to provide suggestions for improvements to the module. The suggestions provided by the validator are then used as a reference to revising the developed module. Data of validation of learning module natural sciences oriented constructivism with the contain of character education can be seen in Table 1.

Table 1. Test Results Validity Learning Module Natural Sciences Oriented Constructivism with the Contain of Character Education Assessment Based on Expert Assessment/ Expert.

No	Aspects of Assessment	Average (%)	Category
1.	Aspects of Constructs	88,89	Very Valid
2.	Aspects of Content	90,47	Very Valid
3.	Aspects of Graph	92,59	Very Valid
4.	Aspects of Language	91,67	Very Valid
Average		90,90	Very Valid

Based on the overall average result of validation learning module natural sciences oriented constructivism with the contain of character education 90.90% with very valid category.

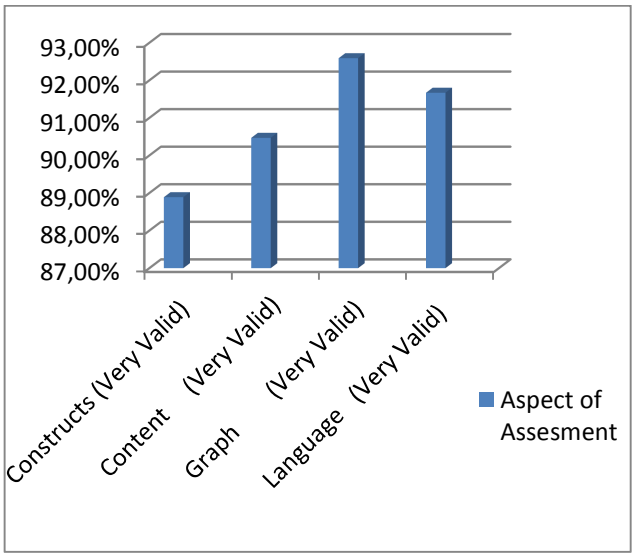

Figure 2. Aspect of Assessment

4.2. Discussion

One of material which can help students lead to independence learning is module. Through module, students can learn based on their own ability in learning. Module can be used for biology lesson (Sumarmin, 2014). Validity of learning module natural sciences oriented constructivism with the contain of character education is rated very valid by the validator. This is obtained from the data analysis of the validity value given by each validator with four aspects of the assessment, namely the aspects of constructs, contents, graph, and language. According to Trianto (2010), valid means that the assessment has provided accurate information about the developed teaching materials, teaching materials in the form of modules developed otherwise valid after meeting the aspects of the construct, content aspects, aspects of graft, and language aspects. The results of the product validity assessment on the constructed aspect into the category are very valid. Based on the above-mentioned modules are developed in accordance with this competence, basic competence, and defined learning objectives.

In the content aspect, the module is declared very valid. Validity in the aspect of the content provided by the validator due to indicators of achievement of competencies has been prepared and sorted by KI and KD in the curriculum 2013. The module also contains materials, learning material constraints, instruction learning activities, exercises designed systematically and interesting to achieve competence expected. In addition, in the module, there is also a way of evaluating each submateri that aims to learners can learn by themselves. This is in line with the opinion of Sudjana and Rivai (2003), the purpose of teaching with the module is that learners can follow the teaching program according to their own speed and ability, more self-study, can know their own learning result, and emphasize the optimal mastery of learning materials.

Further validity is assessed from the aspect of the graph, in terms of aspects of the module of graph expressed is in very valid category. A very valid value is given a validator based on some indicators. First, it states that the module design is interesting. The developed modules are designed to be as attractive. Second, fonts are used in more than one type with clear font sizes being read. The reason for the use of some types of letters is to add to the attractiveness of a learning module natural sciences oriented constructivism with the contain of character education, to avoid the boredom of learners while reading, and to distinguish between material and titles. Muslich (2010) argues to distinguish and get a combination of display letters, can use variations and series of letters.

Third, the suitability of the presentation of the image. This is evidenced by the image on the module can be seen clearly, the image of the quotation includes the source and description of the image in accordance with the given image. This is in accordance with Rustaman (2002) that the module should be well designed to attract readers, both in size (paper, letters, and pictures) and from the variations. The same thing is also expressed by Galitz, et al (in Festiyet, 2008) the display of interesting learning media with images and objects in accordance with the demands of the material, will increase the interest of learners to the learning materials. Furthermore, Pratowo (2011) said that the presentation of the drawings is needed to support and clarify the contents of the material because in addition will clarify the description can also increase attractiveness and reduce the sense of boredom learners to learn it.

The last validity assessed is the aspect of language and readability. Assessment of the language aspects of the modules developed is in very valid categories. This is due to the structure of the sentences used in accordance with the EYD, in accordance with the level of understanding of learners, simple, clear and unambiguous, making it easier for learners to understand the learning activities in the module, and communicative. Hamdani (2011) stated that the things that need to be considered in the preparation of the module are the accuracy in preparing the sentence so that the module is composed communicative and easy to use as a learning guide for learners. This is also reinforced by Prastowo (2011) module is basically a teaching material that is arranged

systematically with language that is easily understood learners, according to their knowledge level and age.

Based on the results of the analysis of the prevalence obtained an average value of 90.90% is with very valid category. According to Sugiyono (2008), a measuring instrument is valid if it can be used to measure what should be measured. The same thing is also stated by Arikunto (2012) if a data generated from a product is valid, then it can be said that the developed product has provided a description of the development goals correctly and in accordance with reality or the real situation. A very valid assessment of the learning module natural sciences oriented constructivism with the contain of character education that signifies that the module can be used as teaching material in learning.

V. CONCLUSION

Based on the development and experiments conducted on learning module natural sciences oriented constructivism with the contain of character education obtained the following conclusions. The learning module natural sciences oriented constructivism with the contain of character education on the material of digestive system of food and chemicals in life for class VIII Yunior Hight School developed has been declared is very valid by the expert validator with result 90,90%. The validation of learning module natural sciences oriented constructivism with the contain of character education in terms of construct, content, graph, and language.

REFERENCES

[1] Arikunto, Suharsimi. (2012). *Dasar–dasar Evaluasi Pendidikan Ed. 2*. Jakarta: Bumi Aksara.

[2] Abimanyu, Soli. dkk. (2008). *Strategi Pembelajaran*. Jakarta: Direktorat Jendral Pendidikan Tinggi Departemen Pendidikan Nasional.

[3] Agboola, Alex, and Kaun Chen Tsai. (2012). "*Bring Character Education into Classroom*." 3(2): 163–170.

[4] Alsulami, Sumayyah. (2016). "Toward a Constructivist Approach in Saudi Education." *English Language Teaching* 9(12): 104–8.

[5] Ayaz, Mehmet Fatih. (2015). "The Effects of the Constructivist Learning Approach on Student ' S Academic Achievement: A Meta-Analysis Study." *The Turkish Online Journal of Educational Technology* 14(4): 143–56.

[6] Baştürk, Savaş. (2016). "Primary Pre-Service Teachers' Perspectives on Constructivism and Its Implementation in Schools." *Universal Journal of Educational Research* 4(4): 904–12.

[7] Chitanana, lockias. (2012). "A Constructivist Approach to the Design and Delivery of an Online Professional Development Course: A Case of the Iearn Online Course". *Research Journal of Educational Sciences*. 5 (1): 23-48

[8] Darcia Narvaez and Daniel K. Lapsley. (2006). "*Teaching Moral Character: Two Strategies for Teacher Education*". Center for Ethical Education. University of Notre Dame.

[9] Doolittle, P. E. (2014). Complex Constructivism: A Theoretical Model of Complexity and Cognition. *International Journal of Teaching and Learning in Higher Education*, *26*(3), 485–498.

[10] Festiyet. (2008). *Pembelajaran Fisika Berbantuan Program Komputer Interaktif untuk Meningkatkan Perhatian Belajar Siswa (Studi Eksperimen di SMPN 7 Padang*. Disertasi. Padang: Universitas Negeri Padang.

[11] Fitri, Rima Hersya. (2013). *Pengembangan Modul Pembelajaran Biologi Bernuansa Pendekatan Konstruktivisme pada Materi Sistem Gerak untuk Siswa Kelas VIII SMPN 12 Padang*. Jurnal Pendidikan Biologi FKIP Universitas Bung Hatta

[12] Hamdani. (2011). *Strategi Belajar Mengajar*. Bandung: CV Pustaka Setia.

[13] Inan, Cemil. (2013). "Influence of the Constructivist Learning Approach on Students' Levels of Learning Trigonometry and on Their Attitudes Towards Mathematics." *Hacettepe Universitesi Egitim Fakultesi Dergisi-Hacettepe University Journal of Education* 28(3): 219–34.

[14] Lufri. (2007). *Strategi Pembelajaran Biologi Teori, Praktik dan Penelitian*. Padang: Jurusan Biologi FMIPA Universitas Negeri Padang.

[15] Mbati, Lydia. (2013). "Online Social Media Applications for Constructivism and Observational Learning." *The International Review of Research in Open and Distance Learning* 14(5): 543–44.

[16] Mulyasa, E. (2006). *Kurikulum Tingkat Satuan Pendidikan*. Bandung: Remaja Rosdakarya Nasution. (2010). *Berbagai Pendekatan dalam Proses Belajar Mengajar*. Jakarta Bumi Aksara.

[17] Muslich, M. (2010). *Pendidikan Karakter Menjawab Tantangan Krisis Multidimensional.* Jakarta: Bumi Aksara.

[18] Nasution. (2010). *Berbagai Pendekatan dalam Proses Belajar Mengajar*. Jakarta: Bumi Aksara.

[19] Neo, Mai, Tse-kian Neo, and Gillian Tan Xiao-lian. (2007). "A Constructivist Approach to Learning an Interactive Multimedia Course : Malaysian Students â€™ Perspectives Introduction : The Constructivist Approach." *Australiasian Journal of Educational Technology* 23(4): 470–89.

[20] Nurhadi. (2003). *Pendekatan Kontekstual (Contextual Teaching and Learning*. Jakarta: Depdiknas.

[21] Plomp, Tjeerd dan Nieveen, Nienke. (2010). *An Introduction to Educational Desain Research*. Netherlands: SLO

[22] _____. (2013). *Educational Design Research.* Netherlands: Netherlands Institute for Curriculum Development (SLO).

[23] Prastowo, A. (2011). *Panduan Kreatif Membuat Bahan Ajar Inovasi*: *Menciptakan Metode Pembelajaran yang Menarik dan Menyenangkan.* Yogyakarta: Diva Press.

[24] Purwanto dkk. (2014). *Pengembangan Modul*. Jakarta: Pendidikan PUSTEKKOM Depdiknas.

[25] Rovai, Alfred P. (2004). "A Constructivist Approach to Online College Learning." *Internet and Higher Education* 7(2): 79–93.

[26] Rustaman, N. (2002). Perencanaan dan Penilaian Praktikum Diperguruan Tinggi. (online),(http://fileupi.edu/Direktori/SPS/Prodi.Pendidikan_IPA/196 2011 51987031-pdf.

[27] Salleh, Tuan Salwani Awang, and Effandi Zakaria. (2012). "Module for Learning Integral Calculus with Maple: Lecturers' Views." *Turkish Online Journal of Educational Technology* 11(3): 234–45.

[28] Schneider Daniel, Paraskevi Synteta, Catherine Frete. (2002). "Community, Content and Collaboration Management Systems in Education: A New Chance for Socio-constructivist Scenarios?". *Research on learning.* 1 (1): 175-184

[29] Setyaningrum, Yanur and Husamah. (2014). Optimalisasi Penerapan Pendidikan Karakter di Sekolah Menengah berbasis Keterampilan Proses: Sebuah Perspektif Guru IPA-Biologi. (*Jurnal*). 1(1): Malang: UMM.

[30] Sudjana, N dan Rivai, A. (2003). *Teknologi Pengajaran*. Bandung: Sinar Baru Algensindo.

[31] Sugiyono. (2007). *Evaluasi Pendidikan Prinsip dan Operasionalnya*. Yogyakarta: Bumi Aksara.

[32] _____. (2008). *Metode Penelitian PendekatanKuantitatif, Kualitatif dan dan R&D.* Bandung: Alfabeta.

[33] Sumarmin, Ramadhan, dkk. (2014). "Pengembangan Modul Pembelajaran Biologi dengan Pendekatan Contextual Teaching and Learning (CTL) yang Dilengkapi Peta Konsep untuk SMA Kelas XI" Jurnal Kolaboratif Vol.2 No.1.

[34] Sumiati and Asra. (2007). *Metode Pembelajaran*. Bandung: CV Wacana Prima.

[35] Suparno, Paul. (2006). *Filsafat Konstruktivisme dalam Pendidikan*. Yogyakarta: Kanisius

[36]Tan, Charlene. (2017). "Constructivism Sand Pedagogical Reform in China: Issues and Challenges." *Globalisation, Societies and Education* 15(2): 238–47.

[37] Tessmer, Martin. (2005). *Planning and Conducting Formative Evaluations: Improving the Quality of Education and Training.* London: Routledge.

[38] Trianto. (2010). *Mendesain Model Pembelajaran Inovatif dan Progresif*. Jakarta: Prenada Media Group.

[39] Turan, Fethi, and Ilkay Ulutas. (2016). "Using Storybooks as a Character Education Tools." 7(15): 169–76.Widodo, A. Nurhayati, L. 2005. Tahapan Pembelajaran yang konstruktivis: Bagaimanakah Pembelajaran di Sekolah?. Makalah disajikan dalam *Seminar Nasional Pendidikan IPA*, Bandung 10 September.

[40] Yulastri Asmar, Hidayat Hendra, G., & Islami Syaiful, E. F. (2017). Developing an Entrepreneurship Module by Using Product-Based Learning Approach in Vocational Education a Asmar, *12*(5), 1097–1109.

[41] Yunita, Ike Evi dan Hakim, Lukman. (2014). *Pengembangan Modul Berbasis Pembelajaran Kontekstual Bermuatan Karakter Pada Materi Jurnal Khusus*. Jurnal Pendidikan Akuntansi Universitas Negeri Surabaya.

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